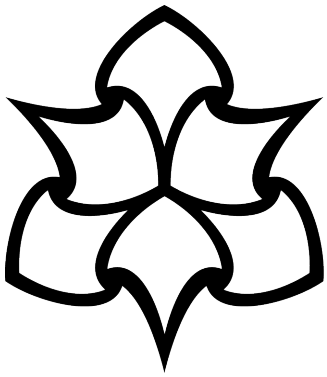

AN EXPLORATION OF THE CHALLENGES FACING CRITICAL CARE EDUCATION

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Abstract

This thesis is the result of a two-year participatory action research study that led to a radical change in the way critical care nurse education is delivered in Greater Manchester. It was motivated by concerns that poor academic performance by degree and master's students was reflective of a teaching 'ecology' (Kemmis et al., 2014) focused on sharing tacit specialist technical knowledge, rather than developing higher order thinking skills. The use of teaching strategies that support the development of these skills is important not only to academic improvement but also to clinical practice, where critical care nurses routinely critically analyse a large volume of data during decision making (Lyte, 2008).

Methodology: Action Research (using mixed methods)

- Focus groups and questionnaires explored the views of all students (n=250), Practice based educators (n=11), lead nurses (n=10), managers (2), university link lecturers (n=2).
- Classroom observations evaluated teaching methods and content over the two-year study, measuring how well they were aligned to programme learning outcomes (n=24).

Results

- Classroom observations identified lectures lacked pathophysiology, evidence-based theory and contained little consideration of patient-centred 'nursing' care.
- In contrast, students prioritised learning pathophysiology, the evidence-base underpinning clinical decisions and preferred teaching

methods that enabled them to work with peers to apply theory directly to the context of clinical practice.

- PBEs and students discovered new ways of teaching and learning.
- Critical care nurse education was separated from acute care nurse education.

Impact

The findings changed local education provision, leading to the introduction of a new local critical care programme which commenced in September 2016. Critical care nurse education was refocused away from a technical, medical model towards one that provides opportunities for students to spend time in the classroom thinking like nurses to develop evidence based patient centred humane care solutions. The findings highlighted the value of academia, identified the usefulness of formative assignments and informed the development of new and innovative assessment strategies. The interventions corresponded with significant improvements in student academic performance and clinical confidence, which had a positive impact on care delivery. The findings informed the development of the National Standards for Adult Critical Care Nurse Education, which were published in 2016 (CC3N, 2016).

Conclusion

Nurse education needs to evolve to meet the changing needs of students and practice. A tripartite approach involving academics, clinical practice and students working together, was highly effective in reshaping both local and national critical care nurse education.

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Firstly, I would like to thank my Director of Studies Dr Duncan Mitchell and Dr Christopher Wibberley for their wise guidance and encouragement during this learning journey.

I would also like to mention the many students who gave their time to participate, along with my colleagues within critical care education, as without their support and patience this study would not have been possible.

Finally, I would like to thank my wife, Anne, for her unwavering support, patience and encouragement in completing this thesis.

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Abbreviations

CCP	Critical Care Programme	Local critical care nurse education programme.
CC3N	Critical Care Network - National Nurse Leads	National Steering group for Critical Care Nurse education. Members are critical care nurse practice leads and university programme leads.
MCCC	Manchester Critical Care College	Organisation responsible for administering and delivering local critical care nurse education.
PBE	Practice-based educators	Clinical-based educators teaching the critical care programme.
PAR	Participatory action research	A research methodology that involves participants and encourages their contribution to the research.
EBT	Evidence based theory	The integration of best research evidence within the context of nursing.

Chapter 1. Introduction: Why did I Decide to Undertake this Study?

Chapter preview

This chapter outlines the reasons why I decided to undertake this study, which resulted in a challenging and rewarding journey of learning. This section introduces the study, outlining the educational setting, along with the professional and personal drivers that persuaded me of the compelling and urgent need to conduct this investigation. It concludes by presenting the aims and objectives of the study.

This thesis is an attempt to better understand the delivery and assessment of contemporary critical care nurse education. It will share the originality of my contribution to new thinking in this area and explain how, through this action research process, I have influenced the learning of students, tutors (and myself), and the delivery of critical care education on a local and national level. This was both a personal and shared learning journey, developing as an academic, whilst working collaboratively with clinical practice based educators (PBEs) to critically explore our educational practice and learn from engaging with our students.

The initial drivers for the action research were a shared pressing concern that our educational practice was not as it should be, and that we were not adequately supporting our students' academic development. This was the starting point, a collective desire to investigate our collaborative higher education programme,

leading us to gain new knowledge, understanding and insights. The process led us away from comfort zones to individually and collectively question the evidence base of what we think we know and what we teach our students. I had worked with the Manchester Critical Care College (MCCC) since 2003 and, like other members of the team, had some preconceptions as to the reasons underpinning poor student attainment. Some proved correct, some false, but the vast majority of key issues and insights were only discovered as a result of undertaking this study.

What we learned convinced us of the need to make major changes to the curriculum, including the way we teach, support and assess our critical care nursing students. The study includes descriptive statistics, combined with excerpts of dialogue with students and other stakeholders to truthfully reflect their views, and facilitate analysis of key issues, relationships, and the political tensions that arose during this period of change. The journey begins by introducing the local critical care programme upon which this study is based.

The action research explored the challenges facing critical care nurse education within Greater Manchester over a two-year period (September 2013–September 2015). The study evaluated the Greater Manchester Critical Care Programme (CCP), which leads to the award of the nationally recognised benchmark qualification for this specialised area of nursing practice. The course was and remains pivotal to workforce planning for these critical care units as national standards require that 50% of their registered nurses hold this nationally recognised qualification (CC3N, 2016). This course is available to registered

nurses working within critical care. The duration is 12 months, and is undertaken at degree or master's level, with clinical competence assessed by mentors within the workplace, which is reflective of its strong links with clinical practice. The quality of this higher education provision, and its key role in delivering sufficient adult critical care nurses to meet workforce needs, signifies its importance to the delivery of critical care services within the region.

The Critical Care Programme (CCP)

This section outlines the original curriculum of the CCP that was delivered during the period of this study (September 2013–September 2015). This information provides the context required to understand why, as a result of learning emerging from this research, a new and innovative curriculum was introduced in September 2016.

The CCP is a collaborative programme, delivered by the Manchester Critical Care College (MCCC), funded by Health Education England, and validated by Manchester Metropolitan University (MMU). The CCP commenced in September 2011 and offers academic recognition for professional skill acquisition within a critical care environment, with half the credits awarded for the competency element, which are assessed by mentors within clinical practice. The curriculum consisted of two units: an acute care unit (ACU) (30 credits), which focused on developing knowledge and skills when caring for patients within an acute care setting; a second critical care unit (CCU) (30 credits) developed students' knowledge and skills in caring for patients within intensive care.

Students attended the MCCC for seven study days per unit. The original content included normal anatomy and physiology, pathophysiology, assessment and management of critically ill patients, and was taught using a systems-based approach, such as respiratory, cardiovascular, renal, etc. The themes were repeated in both units, with the complexity escalating to reflect the increasing acuity of illness. Teaching was delivered by 11 PBEs who were employed and worked within Greater Manchester's critical care units. There were two intakes per year commencing in February and September, each with 45–50 students. Most students were drawn from critical care areas and completed both the ACU and CCU modules, with a small percentage drawn from acute care areas, and therefore attending the ACU only.

The CCP was delivered at level 6 (degree) and 7 (master's), as outlined by the Quality Assurance Agency (QAA) (2008) in the Framework for Higher Education qualifications in England, Wales and Northern Ireland. Students were required to successfully complete the entire programme to gain the award of a Certificate in Professional Studies in Critical Care (academic level 6) or Postgraduate Certificate in Critical Care (academic level 7). The original academic assessment strategy comprised a 3000-word case study for the ACU undertaken after six months and a 20-minute oral presentation based upon very similar criteria for the CCU after 12 months. The assignments involved students critically exploring the evidence base underpinning their nursing care, and was designed to develop underpinning knowledge, alongside a range of graduate level skills. The CCP represented a major change for the MCCC; a transition from delivering a non-

academic or diploma level CCP, to meeting the higher academic standards required when delivering degree and master's education.

The Research Problem

For research to be justified, it needs to offer the potential to resolve a genuine problem (Elliot, 1991). In this case, there was the need to explore the reasons why the educational processes at MCCC were producing sub-optimal student academic performance, indicated by consistently higher than average referral rates as illustrated in figure 1.

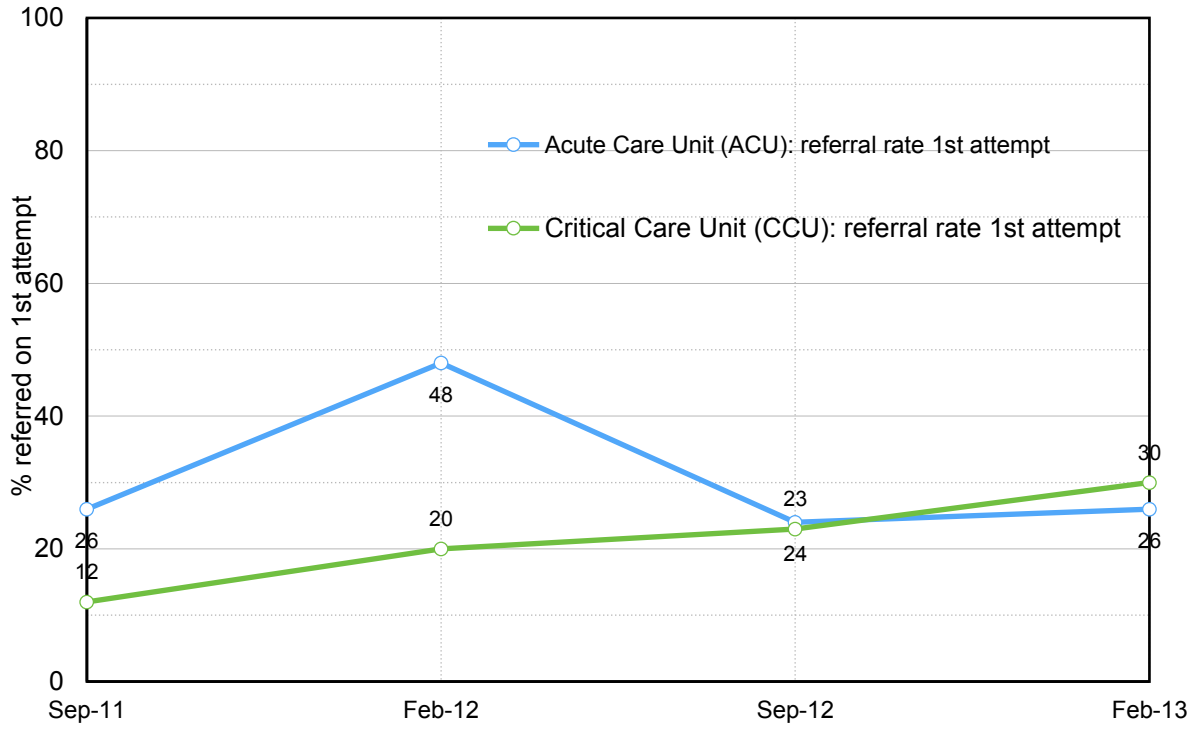

Figure 1. Student academic performance: focus on first attempt referral rates

Timing of results: The results for ACU relate to the period 6 months after the cohort began. The results for the CCU relate to the period 12 months after the cohort began. Therefore, February 2012 cohort 48% ACU referral rate occurred in August 2012, and CCU 20% January 2013. The February 2013 ACU 26% referral rate occurred in August 2013, which is when this study commenced.

The relatively high referral rates continued despite offering the normal student academic support and supervision processes, such as named academic tutors and the opportunity to send drafts. Overall the quality of the students' academic work did not improve, resulting in an average referral rate of 26% on first attempt for the period. The suspicion was that the educational pedagogy was not aligned to supporting students to develop graduate or master's level skills. The teaching methods were one dimensional, focusing almost entirely on transferring clinical knowledge in a didactic manner, reflective of nursing's vocational heritage, according to the European Tuning project report (2009). The classroom experience did not appear to have changed when the collaborative higher education programme commenced in 2011, with mainly non-referenced clinical information, and little linkage to students' academic work. In view of this, it seemed unsurprising that less academically able students may have mirrored this descriptive teaching approach, based upon sharing tacit knowledge, when undertaking their assignments.

This analysis is supported by feedback from the external examiner in September 2012:

The referral percentage for the acute care unit is above the normal average at 48%. This is currently being addressed by the internal course team and MMU advisors. The students who received a referral grade failed to address the assignment remit as the academic work was badly structured and lacked both depth of knowledge and supporting evidence.

These high referral rates and educational differences existed despite the CCP passing all the normal quality assurance processes to become recognised as a higher education programme. The MCCC is not a university and its staff did not have the academic specialist knowledge and experience to support their students; their culture was very different. The PBEs have clinical and educational qualifications, but their focus has remained on delivering clinically able critical care nurses, with the 95% competency pass rate evidence of their success in this aspect. The transition from diploma to degree and master's level highlighted the educational differences presented in meeting the needs and expectations of students studying at these higher educational levels and exposed weaknesses in the CCP.

The experience of working with the MCCC in the two years prior to the start of this study led me to conclude that university lecturers provide a key additional higher education component. These include a strong focus on supporting students to develop their higher order thinking skills, and translate these learned practices into producing better structured, critical and referenced academic assignments. It was clear that the MCCC students were not consistently being adequately supported to develop relevant higher order academic skills. These

are widely recognised as critical analysis and synthesis of best evidence, applied within the context of clinical practice (McCleod Clarke, 2007; Barak et al., 2007; Hardcastle, 2008; Jones, 2012). The consistent high referral rates indicated that 20–48% of students were not able to demonstrate these skills, presenting work that was typically descriptive and frequently failed to utilise referenced evidence in rationalising their clinical practice.

The aim of the CCP is described in the National Standards for Adult Critical Care Nurse Education, who have consistently described this in terms of developing critical care nurses who have the specialist knowledge and skill set to deliver safe high-quality bedside care (CC3N, 2012 and 2016). They expect this care to be based upon the highest standards of research and evidence. To meet this standard, nurses need to develop these higher order thinking skills to enable them to critically analyse the large volumes of information that guide the decisions in such a complex and dynamic area of practice. To achieve these skills the CC3N required critical care nurses to complete the CCP at degree or master's level. The MCCC failed to comprehend the extent of the educational changes required of its curriculum to deliver education at these academic levels. This institutional inaction contrasted with the specialties' clinical and educational nursing leaders, who in developing the National Standards for Adult Critical Care Education recognised the role of higher education in developing future critical care nurses.

Balancing this, there were many positives from the collaborative CCP, such as high quality, current and credible clinical teaching, and a 90% successful

completion rate. The problem was that for too many students this meant one or more re-submissions and a poor learning experience. This was highly frustrating for these students, the PBE and the Programme Committee responsible for the quality of provision. It was also a workforce concern, given the requirement for students to pass both the academic and competency elements to achieve the Critical Care Nurse qualification. Student academic progression was important because high referral rates, with delays in delivering qualified critical nurses to the workforce, had the potential to directly impact service provision.

It was apparent that there were important cultural differences between the MCCC and university faculties, and as a result the programme was not adequately supporting students' academic development. In 2011 when we started the new collaborative CCP, the learning outcomes and assessments had changed, but the study content and teaching methods had remained unchanged. The PBEs had not embraced or appreciated the changes required to teaching when delivering higher education, which meant the students were receiving competency-based vocational education, rather than a graduate level programme. The students and academics were coming from a very different place than many of the PBEs, representing a microcosm of the differences that exist between contemporary graduate and master's level nurse education and the preceding era of nurse training.

The time was right for a formal study, which would allow the key stakeholders to explore the issues and consider the evidence with a goal of gaining greater insight and improving educational practice. The PBEs seemed detached from the

academic learning needs of the students, with the outcome that many students were struggling with their academic studies. The five PBEs that formed the academic marking team rationalised the reasons for the high levels, feeling that poor student attainment lay in two areas:

1. Most students were newly qualified, and so had little practical clinical experience of critical care to reflect on. Some critical care units were sending staff on the CCP after only three months' experience, effectively using it as an induction programme. This was undermining the credibility of the CCP, as these students were novices in their areas and therefore had very little knowledge or relevant clinical experience, which limited their ability to contribute to classroom discussions or reflect with any critical depth of understanding during their assignments.
2. Many of the students had a low level of personal motivation for undertaking study and had poor academic ability.

The PBEs were aware that attendance on the CCP was considered mandatory for new nurses commencing work within critical care. They deduced that many diploma level students were in effect being coerced into undertaking graduate study, even though many were academically weak and not naturally inclined to pursue degree level study. The driver for this pressure was the decision of the Nursing and Midwifery Council (NMC, 2010a) to make nursing an all graduate profession from 2011. All students, regardless of their academic interest, motivation or ability, accessed the programme at degree or master's level to achieve the nationally recognised specialist Critical Care Nurse qualification.

Without this qualification, they would not achieve career progression within these areas, as this is the nationally recognised standard (CC3N, 2016). This drive towards academic attainment for all nurses with career ambitions is an educationally challenging issue for not only the teachers at the MCCC, but is also indicative of wider changes and growing pains that faced nursing in England as it rapidly transitioned from a widely diploma level profession to an all graduate and increasingly master's level profession.

In September 2013, the extent of the change within continuing professional education was not appreciated, as by September 2014 all nurses entering the professional nurse register in the UK were graduates. This resulted in a rapid increase in the number of nurses who expected to undertake the programme at master's level, which raised concerns within the MCCC as to whether this would further increase referral rates, impacting on workforce planning. This change in student demographics over the two year period of the study generated tensions between those in favour of encouraging master's education and those who viewed it negatively. This development was a major driver of the widespread changes to the curriculum and culture of the learning environment. It raised educational questions regarding the profound differences between the current degree programme and master's level education and had the effect of raising the educational bar.

These changes created tensions relating to what a master's level critical care programme should look like, who should access it and how much clinical experience they required prior to commencing the course. Critics of the increase

in master's level education such as Hardcastle (2006) in New Zealand and Aitken et al., (2006) in Australia have both questioned the value of a master's level qualification if it is not matched by a mastery of clinical practice at the bedside. This argument has substance given that all graduate and master's students are assessed to the same level of clinical competence. However, this does not invalidate the desire by students who already have a degree to study this speciality at a higher academic level. This issue became a contentious and recurrent theme, which is explored throughout this study.

Tensions and Politics

A tension existed in our university having validated the programme, because of the requirement that 100% of students should begin their course with the belief that they will successfully complete it. Such consistently high referral rates were unfair for students, as it raised the question of whether we were setting many students up to fail by allowing as many as a quarter to access a course which may not have been commensurate with their academic ability. This led me to question what are acceptable, good or poor pass rates? The consensus across my colleagues at MMU was that a referral rate of 20% on first attempt for written assignments was the norm, indicating we were consistently exceeding this. There is a dearth of information relating to this important quality indicator, and it is unsurprising that universities would be reluctant to share this information with their competitors. The outcome was that as lead tutor from MMU, and having written much of the programme, I felt a professional responsibility to these students to improve the quality of the course. These responsibilities are well defined by the Quality Assurance Agency.

The Quality Assurance Agency sets the standards for higher education institutions in the UK to safeguard the quality of academic practice, including the quality of education and the student experience. It was unambiguous that the University as the awarding institution has 'ultimate responsibility' for the academic standards and quality of the student learning experience on the CCP (QAA, 2012b:6). The students must begin the course with the reasonable expectation that as they were accepted onto it, they were capable and expected to achieve the learning outcomes. The selection criteria required urgent review.

This was a politically sensitive area, with MCCC management and the University requiring a graduate level programme, and Greater Manchester's critical care units requiring their workforce needs be met, which meant their staff successfully completing the programme within 12 months. The MCCC was conflicted over how to manage these tensions, with pragmatic staff pondering the development of a diploma or a non-academic option. However, students already had a diploma or degree and would gain no further academic reward for their effort, and neither of these options met the standard required to gain the award of a nationally recognised critical care nurse qualification.

The tensions strongly motivated me to explore and understand the educational issues, to allow our collaborative team to deliver the educational changes required to make the CCP excellent. I felt compelled to better understand the underpinning educational issues, explore how we could work as a team to make improvements and then test these in practice. To understand my relationship with the CCP / MCCC and gain insight into why I decided to undertake such a major

commitment, we need to examine the factors that influenced this decision and helped shape my professional perspective.

Researcher's Background

My relationship with the MCCC is longstanding, having been part of the team who developed the original Greater Manchester competency-based training programme in 2001. This formed part of my role as a senior critical care nurse and educational lead, having worked in this speciality for 15 years. In 2003, I managed the MCCC for 12 months and developed a personal attachment to the organisation and the CCP.

Since 2004 I have worked as a Senior Lecturer in Nursing and felt that I had developed expertise in the delivery of higher education. My passion to understand education and improve my teaching and academic practice is longstanding, completing my MA Education in 2007. I remained closely aligned to clinical practice, maintaining my role as an instructor for the Resuscitation Council (UK), which retained my focus on ensuring clinical education provides nurses with the skills to competently care for acutely and critically ill patients.

I continued to work with the MCCC and this provided the basis for the development of a collaborative programme, which moved the CCP from competency-based training to higher education. In hindsight, I was naive to think this transition would be as easy as simply writing a new curriculum. It had taken me many years to develop from a clinical educator, training and educating nurses in the practice of critical care, to gaining expertise in the specialised practice and

nuances required to deliver higher education. When consistently higher than expected academic referral rates became evident from September 2011 to 2013, I felt a range of emotions ranging from disappointment, responsibility and professional intrigue into the educational reasons underpinning this.

I am a nurse, educationalist and an academic, with a focus on objectivity and rationality, which combine to inform my perspective. I am also a pragmatist and so investing so much time and resources would need to deliver tangible results. These factors convinced me this was an opportunity to conduct a form of research that would allow us all to learn together, would be meaningful and have lasting impact. On reflection, when I began this study I lacked critical insight relating to the depth and extent of the issues involved, including the knowledge and cultural gap between higher education and clinical practice, or the challenges this would present to a relatively novice researcher.

Rationale for the Research

This research had the clear and well-defined purpose of evaluating the CCP curriculum and learning as a team how we could meet the increasing academic requirements of critical care nurse education. This investigation was undertaken as a team, including our students, to help us all to gain a shared insight into our actions, ranging from what we plan to teach, the way we teach, to the subtler behavioural signals that we subconsciously provide to students, and the impact all this had on the development of students' graduate level skills. The primary purpose for the CCP was to develop nurses who were able to care for critically ill patients and it was paramount that during any changes, it retained a balance

between academia and practice, which would continue to deliver highly skilled critical care nurses. The challenge was to improve the academic aspect, without compromising the clinical dimension, as this would be contrary to the traditions of the MCCC and would be rightly resisted by the PBEs. The objective was that as educators, practice leads, academics and students we would learn together how to improve the CCP and develop it into the best CCP in the UK, learning lessons along the way that could be shared with other providers nationally. Richardson et al. (1990:75) capture the essence of the vision for this research and view of how its success may be measured when they state:

> Research is about illumination. If we don't succeed in that we have failed. If a person reads something and doesn't feel any wiser, then why was it done? Research should fire curiosity and the imagination ... If people feel research illuminates their understanding and gets into their thinking, then it's of use.

I have outlined our[1] ideas of why so many of our students were struggling with the academic assessments. At the time this study began, these were assumptions, without any meaningful evidence to show us how or where we needed to make improvements. As a relative outsider, and academic, I needed compelling and credible evidence, obtained using rigorous established research methods, to provide the Programme Committee with the information required to make informed decisions. It would also be needed to persuade experienced educators, who had taught the course in the same way since it was established

[1] 'Our' refers to the team of PBEs, managers and academics working together at the MCCC

in 2001, that there was a need to re-examine and potentially change their practice.

Given the ingrained nature of the current practices and culture, and the political sensitivities of an academic evaluating their practice, it was important that any research was performed in as democratic, inclusive and non-threatening a manner as possible. Action research met these characteristics by providing professionals with a way of systematically analysing and resolving issues in their practice (Morton-Cooper, 2000). Within the educational setting, action research is any systematic enquiry conducted by teacher researchers to gather information about ways that their course operates, how they teach and how well their students learn (Mills, 2003:1). Action research provided a recognised mechanism for the exploration of the values of the MCCC, the curriculum and self-reflection by the PBE. The aim was to improve the alignment of teaching to student learning needs and hopefully enhance PBE teaching satisfaction. The adoption of an action research methodology, with its socially democratic ethos would pose additional challenges of balancing my roles as principal researcher; lead university link lecturer, with responsibilities for the quality of the programme; and a critical care nurse. The suitability of this methodology to deliver these outcomes will be explored in depth in Chapter 4.

Aims and Objectives of the Study

The aim of this research was to explore how the uplift to graduate (and increasingly master's) level education was shaping the delivery of critical care nurse education. The study investigated why students were consistently

performing to a sub-optimal academic level. It was suspected this was the result of weaknesses in the curriculum, and there was a compelling need to investigate and make improvements to ensure students could achieve their full potential. The intention was to work in partnership with practice colleagues to explore how to continue to help students develop clinical nursing knowledge and skills, alongside academic growth and attainment, represented by the quality of their assignments and clinical confidence. This was a moment of contemplation and reflection; a time where it felt right to take stock and follow Young's advice (1998:2), by subjecting our practice to critical examination. The belief was that this would help us to learn, understand how to improve the curriculum and gain a better understanding of how actions in the classroom were affecting students' performance (Baumfield et al*.,* 2013). This reflective approach is supported by Biggs (2003:259) who advocated that 'effective teaching means becoming a reflective practitioner, and for that you will need a theory of teaching'. It was by continually drawing on educational theory, listening to participants and drawing on our collective experience that we implemented and evaluated changes to the programme.

The development of clear aims and objectives was given added significance because this was participatory action research, and retaining direction required a shared vision, a collective sense of purpose. This was an action research study whose primary intention was to achieve local change through mutual 'learning', with the generation of theory subordinate to the goal of improving local practice (see Elliot, 2009). The aim and objectives are set out below, although as McKernan (1996:32-33) notes, because action research is a formative process,

these were slightly modified during the process of joint reflection and evaluation, which are intrinsic features of action research. This resulted in the addition of 'and master's level' to the aim, because the student demographic changed as the study progressed.

Aim:

To explore how the uplift to graduate (and master's level) education is impacting the delivery of critical care nurse education.

Objectives:

a) To investigate current teaching practice, informing the implementation and evaluation of strategies designed to help students improve their academic development.

b) To improve the academic performance of students undertaking the Critical Care Programme.

c) To develop increased understanding and insight amongst the MCCC staff into the impact learning methodologies and practice have upon student learning experience.

Thesis Structure

The process of deciding how to structure this thesis required careful consideration. As McNiff (2013) explains, action research is different from traditional forms of research, so the format of sharing it is also different. The 'traditional linear structure' of a single literature search at the start of the study, and the presentation of findings in themes did not accurately represent the

research story. A more satisfying synergy was sought to reflect the unwinding experience in terms of the ongoing dialogue with the literature and the importance of the chronology of the action research cycles to building the layers, learning and intervention. Similar experiences have been reported when structuring action research theses (Winter, 1998; Dick, 2002; Fisher and Phelps, 2006; Davis, 2007; Reason, 2007), with the traditional structure described as a constraining template for positivism, that does not represent the lived experience (Stapleton and Taylor, 2004). This literature informed the development of the following structure, which reflects the action research process.

Further literature searches and interim discussions are included after each action research cycle. This break from the traditional thesis format is justified because it represents the 'theory-practice conversation' in action research practice (McAteer, 2013:6). Not all the issues are known at the start, such as the emergence of case histories, the questioning of our basis for 'knowing' and consideration of the learning environment as a living ecology. Therefore, pausing to critically reflect on our interventions and periodic referral to the literature to deepen our knowledge was required to inform further action, along with shaping the ongoing development of the study (Green, 1999; McNiff and Whitehead, 2009; McAteer, 2013; Anderson and Herr, 2014). These modifications are justified to provide an accurate representation of the lived action research process (see Winter, 1998; Richardson, 2000; Davis, 2007). They meet a key aim in the presentation of action research of explaining why we researched topics and how this informed the collective understanding that informed our actions and led to the generation of new knowledge (see McNiff and Whitehead, 2009).

The findings are presented chronologically, reflective of the four cycles of the action research used within this study. This structure reflects the compelling emergent story; the process of sharing the data with colleagues at each stage of the action research process, congruent with a belief that the traditional model of thesis writing is not appropriate for the cyclical process of action research (see Fisher and Phelps, 2006; Reason, 2007; Davis, 2007). The cyclical presentation of data authentically represents the process of critically questioning the meaning of data, seeking counter assumptions at each stage (Dick, 2002). It is designed to overcome a common limitation in the presentation of action research findings, the lack of reporting of the research cycles in a way that allows others to analyse the study systematically (Gibbs et al., 2017). It presents action research as it is, including the frustrations, dead ends and the search for new or better questions, which Winter (2002) argues is at the heart of good action research.

Conclusion

This chapter has outlined the complex issues that required investigation for us to learn how to improve the quality of critical care education. Central to this undertaking was the belief that the high academic referral rates were symptomatic of fundamental flaws in the current programme that were reflective of differences in our educational approaches. The education appeared solely focused on the provision of clinical education, at the expense of developing students' academic skills. It seemed that in many respects we were speaking a different language. This study provided the opportunity to work together to challenge our assumptions, understand our differences and find solutions that

would improve the quality of the programme, while better supporting our students' academic and clinical development.

This was a personal as well as professional journey. As the lead MMU academic, I had a professional responsibility to work with the MCCC to ensure students were fully supported to achieve educational success. This study provided me with the challenge of exploring and attempting to resolve these local issues, particularly the forces that are driving and resisting nursing's transition towards an all graduate and master's level profession.

Chapter 2. Literature Review: Contextualising the Concerns

Chapter preview

This literature review critically examines the regional, national and international forces that steer critical care nurse education towards graduate / master's level study. This includes consideration of the workforce needs of our critical care units, balancing these alongside the contemporary learning needs of nurses as professionals, individuals and contributors to our wider society. The value of higher education to critical care nurses and nursing in general is questioned. Why do nurses need to be graduates? Finally, there is an exploration of higher education strategies that best support the development of graduate level knowledge and skills that are relevant to, and enhance the quality of nursing within critical care.

Literature Search

This chapter examines the educational, clinical and political environment in which the Greater Manchester CCP was delivered. It performs the first action research step of building a shared understanding of the 'specific character of the situation at hand' (Lewin, 1948:204), providing an assessment of the key issues. This was the start of an action research journey that continually raised many questions about the right way to address varied and complex educational challenges. A theme of the research was to investigate how to improve critical care education provision, and this required the ongoing review of the literature to explore the

evidence base supporting interventions to ensure these were well informed (given the importance of this curriculum to critical care services). This is an educational thesis, and the purpose of this literature search was to build a shared understanding of the educational environment and theories that shape the provision of critical care nurse education.

The approach provides a narrative review of current published knowledge to provide a comprehensive understanding of the key concepts, educational theories and evidence relating to local and national provision of critical care nurse education. The narrative assessment analyses, synthesises and evaluates this literature to provide the contextual understanding required to underpin this study. The initial literature review explored themes such as critical care provision, critical care nurse education; along with an evaluation of the purpose of higher education within critical nurse education. This process of contextualisation was followed by a review of the educational theories and research that underpin current teaching practice, with the intention of informing evaluation, and where required, re-design of the critical care nursing curriculum.

A narrative approach to reviewing the literature was used because my aim was to explore the broad concepts, terms, and theories, including the evidence relating to educational practice (see Saks and Allsop, 2007). A systematic review was not undertaken because I was not seeking to answer a specific question relating to a single focused area of educational best practice (see Green et al., 2006). A broader and more flexible approach was required, given the ongoing need to search and re-search the literature as new queries arose.

In order to ensure no relevant studies or information sources were missed, broad search terms were used including ‘critical care nursing’, ‘critical care nurse education’, ‘critical care beds’ AND ‘Greater Manchester’. As this is primarily an educational thesis the search focused on the role of ‘higher education AND nursing’, and ‘critical thinking’ AND ‘higher education’. Boolean logic was applied, including the use of truncation to search the data bases. The reference lists of articles were also examined to locate further relevant literature.

The data bases searched included the MMU library, CINAHL, Scopus, Pubmed, Proquest (ERIC), British Nursing Index, Science Direct, The Cochrane library, Google Scholar, government sites, as well as the websites of critical care and nursing professional organisations.

Results were narrowed down using the inclusion criteria of ‘scholarly and peer reviewed’, ‘full text’, in the discipline of nursing, ‘English language’, searching books, dissertation or thesis. Book reviews and newspapers were excluded. There was no restriction on the year material was published because the purpose was to find all relevant educational literature. Results were refined by using database filters to exclude results which lacked relevance.

Education Theory

The focus of this study is to learn how we can best educate critical care nurses, who are experienced healthcare professionals. In order to understand and improve critical care nurse education, we need to understand the educational theories that underpin our curriculum.

Theories of education provide different views on human nature and how people best acquire new knowledge and skills. Behaviourism theories, based on the work of psychologists such as Skinner and Pavlov, position students as passive recipients of knowledge. Students commence learning with a clean slate, and no free will, and they are conditioned by the teacher to achieve the desired learning outcomes through positive and negative reinforcement (David, 2007). Whist there is some truth that our students are supported through positive reinforcement to achieve the learning outcomes, the nurses undertaking the CCP do not come with a clean slate. They possess varying degrees of critical care nursing experience, and as students undertaking higher educational programme, they are encouraged to question their educators, peers and mentors.

Social learning theories are more useful in this context, because they recognise the contribution to learning of students as individuals, recognising their previous clinical experience. The purpose of education is to recognise and build upon this existing knowledge and skills, using it as a starting point, to actively engage with students as partners in constructing and furthering their learning (Daniels et al, 2009); a position which reflects the MCCC learning environment. The social cognitive theory, developed by Bandura (1986) recognises the social nature of learning, and is useful in the context of the MCCC, because students work within critical care units across Greater Manchester, with peer to peer learning forming an important feature of education, as they learn from each other and share their practice experiences.

Experiential learning theory is important in this context, because it is based upon the belief that we learn by doing, observing, and reflecting upon practice based experiences. Learning occurs primarily as a result of reflection upon these practice based learning experiences. The theory is based largely upon the work of Dewey (1938), Kolb (1984) and Schon (1983).

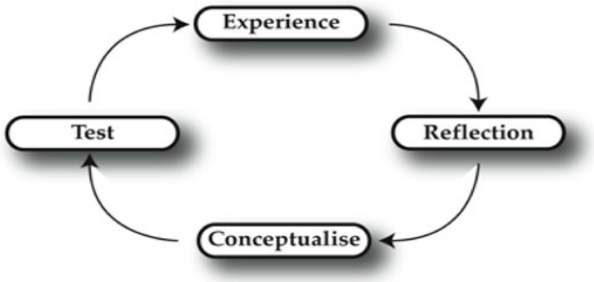

Figure 29. Kolb's (1984) learning cycle

Experiential learning theories such as Kolb's learning cycle are very relevant in nursing because it is a practice-based profession. These theories resonate because they recognise that learning is frequently based upon reflections that are individual; and can occur inside and outside the classroom. Further, Dewey noted the necessity of using educational methods that help students integrate new theory directly to the context of their practiced base experience. This approach to learning may take many forms, such as discussions on professional issues, problem-based learning, simulation, case scenarios and learning within clinical practice. This cycle of learning through doing and reflecting on practice serves as a bridge in the theory-practice relationship, underpinning learning within the MCCC and clinical practice.

It is this emphasis on reflection and application of knowledge (theory) directly to the context clinical practice that are key concepts underpinning individual and shared professional learning (Philpott, 2014). This theory reinforces the importance of students having a significant period of experience of working within a critical care environment, as this knowledge and operational experience, provides the basis for individual and group reflection, which are key features of the curriculum.

These educational theories shine light upon the educational pedagogy and practises that underpin the critical care programme; providing a basis for considering our underlying views on the nature and purpose of nurse education. Importantly, social and experiential learning theory informs us that learning does not begin and end in the classroom (Alexander, 2009), rather it is a reflection of the social and cultural fabric of the MCCC, clinical practice, and the collaborative partnership with MMU as the higher education provider.

Higher Education

Higher education is changing in many ways. There has been a concerted policy widening of access to graduate level education from a choice for the select few, to becoming increasingly the norm for people wishing to either enter a profession or progress in their careers (Collins and Hewer, 2013). Tony Blair created the vision for this transition in 2001, setting a goal for 50% of young adults to progress to higher education by 2010 (Blair, 2001:20). Although the Labour government quietly abandoned that target in 2012, they came close to meeting it, as by 2009, university participation rates amongst 17 to 30 year olds had risen to 45%

(Mansoor, 2010). Over the last five decades, universities have become increasingly global institutions, using technology to allow their business to expand across geographical and intellectual borders (Wildavsky, 2010) to influence society. These institutions develop and share knowledge, including evidence-based research that supports decision making at all levels, ranging from government strategic policy, to everyday healthcare practice. In this study, we learn how it is directly shaping the delivery of nurse education and making a positive impact upon clinical practice.

The increasing influence of universities was predictable, driven by the economic need of western societies to increase the competitiveness of their workforce, and fulfil the needs of a knowledge-based society (Handy, 1998). In this view of the world, universities are simply businesses meeting people's 'hungry spirit' for education and self-actualisation (Handy, 1998). Nurse education has long been subject to these global changes. In the late 1980s, Project 2000 (United Kingdom Central Council for Nurses and Midwives, 1986) moved the training from hospital schools of nursing to higher education, in a move designed to establish nursing as a profession with the academic status of a diploma. This represented a move away from traditional vocational bedside training towards a strategy that embraced higher education to develop a more 'knowledgeable doer' (Hill and Jones, 2012). Further transition followed with the introduction of graduate only entry in to nursing in England since 2011, based on the theory that higher education will develop the ability of nurses to integrate the science of nursing practice within nursing care (Billings and Halstead, 2016).

There is strong evidence that this assumption is widely accepted. Higher education has been very successful in raising the entry level for nursing to a minimum of degree level in 60% of countries across Europe (Lahtinen et al., 2013), cementing academia's position, whilst increasing the pressure for nurses with professional career aspirations to achieve higher levels of education. If degree level is now the entry level for nursing, the next step is for nurses to attain a master's or PhD. This has ramifications for all of us, because of the competitive pressure it adds to our personal lives to achieve economic, social and career success.

The Department for Business Innovation and Skills (BIS) green paper *Fulfilling our Potential* (BIS, 2015:7) challenges universities to focus on improving teaching standards, delivering value for money and achieving high employability. This represents a transition from a traditional policy primarily rewarding universities for their research, to one that provides financial reward for achieving high educational standards (BIS, 2015). This rebalance is needed; in 2015 the Higher Education Academy reported that only 35% of students rated their learning experience as 'good or very good value for money' (BIS, 2015:19). This highlights the importance for nurses and their employers to have confidence in the educational standards of the CCP, and its ability to support them to succeed in gaining career qualifications and contribute to improving critical care nursing practice. This research provided students and employers with a significant voice, as partners in evaluating and shaping the region's critical care nurse education.

Nursing is well positioned in terms of employability, given the shortage of nurses in the UK. It is the quality of nurse education that is the focus within this study, as it is central to developing the qualities, the type of knowledge and skills that shape the nurses who we depend on to provide so much of our healthcare. Higher education needs to balance the development of the graduate level skills required for personal growth, such as academic knowledge and skills, alongside the needs of the employer for a competent flexible workforce. Nursing, like many other professions is practice based, and to maintain its value and relevance, teaching must reflect this, with theory that is current and closely aligned to developing nurses' clinical practice.

The recent 'academicisation' of nursing has been controversial, with the accusation that it has taken nursing away from patients, by focusing too much on broad theoretical issues and non-practice-based skills such as academic writing, whilst relegating the actual job of nursing to subsidiaries such as healthcare assistants (Hill and Jones, 2012). It is important, as an academic researching this topic, to recognise the validity of such concerns from fellow nurses both at the MCCC and in clinical practice, as they represent an underlying historical mistrust between higher education and nursing practice. Consistently high student referral rates since the introduction of graduate level for the CCP in 2011 have increased questions amongst some educators and students as to the value of an academic framework within critical care nurse education. In seeking answers, we need to explore the generic changes influencing adult nursing.

Adult nursing

Nursing is the largest professional group working in the NHS (National Health Service), with over 371,000 registered nurses (NHS Information Centre, 2014) and all require continuing professional development (NMC, 2015). To understand and plan critical care nurse education, we need to possess a clear vision of the end product, the nurses we are seeking to develop and the pathway nurses take on the way to becoming competent specialist critical care practitioners. Nurses undertaking the CCP may be seeking to become recognised specialist practitioners, but they remain, fundamentally, nurses. As with all practising nurses within the United Kingdom, they must possess a current registration with the Nursing and Midwifery Council. The NMC provides core professional standards, but the expectations of nurses are subject to wider forces and this is reflected in recent definition changes.

In 2007, the Royal College of Nursing (RCN) recognised that nursing is constantly evolving according to the needs and expectations of the healthcare environment in which it operates. It defined nursing as:

> The use of clinical judgement in the provision of care to enable people to improve, maintain, or recover health, to cope with health problems, and to achieve the best possible quality of life, whatever their disease or disability, until death. (RCN, 2007:3)

This definition is reflective of the very broad nature of providing nursing care in a wide range of settings from the community to acute hospitals. Nurse education branches include adult, child, learning disabilities and mental health (NMC,

2015), though the focus of this thesis is adult nursing. Broad strands of knowledge and skills are taught during the pre-registration adult training, based on the Standards for Pre-registration Nursing Education, covering professional issues, care delivery, management and personal development (NMC, 2010a). To enter the professional register, student nurses must complete 2300 hours of theory in university and 2300 hours of clinical practice during a full-time three-year graduate programme (NMC, 2010a). This is indicative of the highly practical nature of nursing and the well-balanced partnership between higher education and the National Health Service in developing the nursing workforce; with the achievement of clinical and academic competence awarded equal credits. This is an established model, which the educational collaboration between MMU and the MCCC emulates.

Adult nurse training covers a wide range of topics, such as general anatomy and physiology, disordered physiology, combined with emotional aspects of providing holistic patient centred care. This involves communicating with patients, relatives and other members of the multidisciplinary team, often at times of stress, either within their homes or in hospital. There are a diverse range of areas to become familiar with during 61 weeks of clinical practice, including community, medicine, surgery, theatres and critical care areas. The diversity of general adult nursing education provides context, in that after three years of education, nurses who decide to specialise in critical care are entering a largely new and highly specialised environment caring for the critically ill. This transition requires substantial support, time and a planned programme of study to develop the required standard of specialised knowledge and clinical competence (BACCN,

2009); but this does not explain the function of academia in supporting this development. To understand this, requires investigation of wider social, political and economic influences that are shaping the development of nursing as a profession.

Nursing: the pursuit of increased professional standing

The primary characteristic of a profession is recognised as the presence of a unique specialist body of knowledge, a sense of power and authority that provides professionals with a sense of standing and autonomy (Koubel and Bungay, 2009). These characteristics are identified below (Haralambos and (Holborn, 1995; Keogh, 1997).

1. A systematic and organised knowledge base
2. Public service and altruism
3. Codes of ethics and regulation of professional conduct
4. High levels of reward

Haralambos and Holborn (1995)

1. A body of specialised knowledge
2. Uses scientific methods to enlarge that body of knowledge
3. Education is university based
4. Has control over its professional policy and activity
5. Practised by nurses who have a lifetime commitment and dedication to nursing
6. Offers a service to the public
7. Has professional autonomy

Keogh (1997)

This section explores the influences upon nursing as it seeks to develop further as a profession. In 2000, Walsh recognised that nursing had fallen behind many of its professional peer groups, including physiotherapists (all graduate since 1992), pharmacists, dieticians, social workers and teachers, as these were already graduate professions and nursing was just entering university education.

In 2009, the Tuning Report identified that 50% of 33 European countries were delivering nursing pre-registration courses at degree level, including Scotland and Wales. The report recommended that nursing became an all graduate profession and they were supported by the World Health Organisation (WHO) and International Council for Nurses. Tuning (2009) argued that as many of the professions, nurses work alongside in practice were already graduates, to have equal standing and compete, nursing needed to match this level of education. Their definition of nursing represented a more contemporary professional view of nursing practice, differing significantly from the Royal College of Nursing's in 2007, by placing an emphasis on nurses making clinical decisions that are based upon critical thinking and a current evidence base:

> The nurse is a safe, caring, and competent decision maker… delivering nursing practice that is appropriately based on research, evidence and critical thinking that effectively responds to the needs of individual clients. (Tuning, 2009:20)

This evolution is representative of a macro change in nursing, moving towards a more professional stance, aligned to graduate level higher order thinking skills and behaviour. The NMC recognised the significance of this report, citing it as highly influential in their decision to make nursing in England an all graduate profession at registrant level (NMC, 2010a). Their current educational standards reflect this change, stating that nurses must be able to develop practice, applying analytical problem-solving approaches and current evidence during decision making; skills that were required to keep up with technical advances and meet future workforce expectations (NMC, 2010b).

These changes to nursing were not made in isolation but formed part of a much wider European workforce strategy, termed the Bologna project, which started in 1999. The goal of this process was to standardise higher education qualifications throughout Europe's universities to provide transferrable qualifications, in support of a mobile European workforce (Davies, 2008). In nursing, the pathway was agreed to be set at three levels: degree, master's and PhD, based on the view that this level of academic education forms an essential dimension of a modern profession (Collins and Hewer, 2013).

This view is shared by academics such as Longley et al. (2007), McCleod Clarke (2007) and Hardcastle (2008), who argue nurses need to possess high order intellectual skills that can be applied to clinical judgement and decision making. The rationale for nurses moving to a minimum of graduate education is the dynamic and complex nature of healthcare, particularly within highly specialised areas such as critical care, which requires nurses to be able to critically question, evaluate, interpret and synthesise a wide range of information, as represented in figure 2:

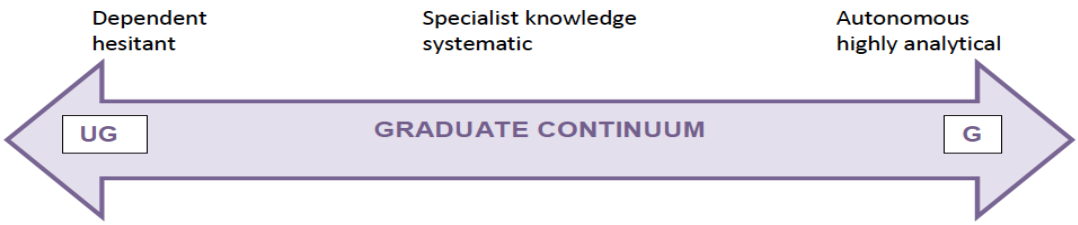

Figure 2. Line of graduate continuum indicating shift (Anglia Ruskin University, 2009). *Source: Lovegrove and Davis (2013)*

The development of these intellectual skills and specialist knowledge supports nurses in making informed clinical judgements. This establishes clear links between increased academic achievement and an improved knowledge base in helping nurses become more informed decision makers, improving practice.

Nurses are accountable for their actions and omissions and must be able to defend the decisions they make, being answerable to their professional Code of Practice (NMC, 2015). The acquisition of graduate level higher order thinking skills are requisite in practising with confidence in the knowledge that decisions made are rational, evidence based, defensible and in the best interests of patients. This is important to a nurse in complying with professional standards (NMC, 2015), protecting their registration, and their employers from vicarious liability. Nurses aim to provide safe effective care to patients, incorporating compassion, competence, communication, courage and commitment (Cummings, 2012). This must be delivered consistently or the people who rely on nurses at their time of need will be failed (as was the case at Mid Staffordshire) and the reputation of nursing as a profession damaged. Higher academic levels must not be at the expense of general nursing standards, especially in highly technical and medically dominated areas, such as critical care. Nurse educators must teach the essence of nursing, caring for critically ill people and providing support for their families, which is something the current CCP may lack, as they were themes that were frequently poorly represented in student assignments.

Advancing the intellectual standing of nursing is important for developing the profession's freedom of thought, knowledge creation, ideas and political awareness. These are core for the continued development of nursing as a

strongly represented and defended profession, especially when the profession is under severe pressure within the workplace. Dame Jessica Corner (2014), chair of the Council of Deans for Health, provided an important reminder of the political dimension when she warned that nurses 'need to fiercely protect our independence from the NHS'; recognition that the NHS is a highly political organisation subject to increasing financial constraints, which may not always have nurses' best interests at heart.

The Greenhalgh et al. report (1994), and the introduction of advanced nurse practitioners to reduce doctors' hours to comply with the European Working time directive in 2009 (BMA, 2016), provide examples of how the development of the nursing has been shaped by the needs of medicine and politico-economic forces. The goal in each of these instances was to reduce junior doctors workload, and the outcomes for nurses has been the requirement to fulfil many technical tasks previously undertaken by medical staff. Nursing has and continues to evolve to meet the changing needs of service provision, as demonstrated by the NMC Standards of proficiency for adult nursing (2018), with core skills for all adult branch nurses expanding to include management of intravenous therapy, cannulation, chest auscultation, and ECG interpretation. Within the context of this evolving role, it is important that nurses retain their core nursing identity, using these additional skills to enhance patient centred holistic care delivery, rather than workload pressures reducing nurses to technicians, who deliver task driven care (see Kiekkas, 2014).

Critical Care: a historical perspective

Understanding the educational needs of critical care nurses requires a clear understanding of this environment and its history. The speciality was established by anaesthetists in the 1950s, when they moved polio patients to the theatre recovery area for mechanical ventilation. The centralisation of resources and use of these technically advanced techniques created an 'intensive care' unit, which reduced mortality within this patient group by 50% (Intensive Care Society (ICS), 2013). These units developed in an ad hoc manner within the UK in the 1970's, based upon local service need, with care provision often divided into two areas according to patient acuity: intensive care (ICU) for mechanically ventilated patients and high dependency (HDU) for those requiring care at a higher level of support than available in ward areas. The combined name for these areas is critical care (ICS, 2015).

Critical care areas are highly demanding and technical environments (Woodrow, 2006) that are led by anaesthetists who specialise in this area to become intensivist consultants. Team work is essential for maintaining quality and patient safety, with nurses working as part a wider multidisciplinary team that includes specialist physiotherapists, nutritionists, radiologists and microbiologists. This is because ICU patients are typically intubated and ventilated, and may have additional organ failure, commonly renal, which may require haemofiltration, or and are critically ill. HDU patients do not require mechanical ventilation, but often have single organ failure, possibly stepping down from ICU or recovering from major surgery (ICS, 2015). National guidance matches the patient to the appropriate clinical environment according the acuity of illness: level 0-1 patients

being cared for in ward areas, and level 2 and 3, being cared for in HDU and ICU respectively (Figure 3).

Level 0	Patients whose needs can be met through normal ward care in an acute hospital.
Level 1	Patients at risk of their condition deteriorating, or those recently relocated from higher levels of care, whose needs can be met on an acute ward with additional advice and support from the critical care team.
Level 2	Patients requiring more detailed observation or intervention including support for a single failing organ system or post-operative care and those 'stepping down' from higher levels of care
Level 3	Patients requiring advanced respiratory support alone or basic respiratory support together with support of at least two organ systems. This level includes all complex patients requiring support for multi-organ failure.

Figure 3. Level of patient acuity (ICS, 2015)

The development and importance of critical care provision has increased rapidly over the last 20 years as the acuity of patients' conditions and the number of medical interventions has increased. In 1998, a flu epidemic exposed that there was only one critical care bed for every hundred in-hospital patients (Audit Commission, 1998). The Audit Commission identified where patients admitted to critical care areas originated from, demonstrating that the presence of available critical care beds is integral to the ability of acute hospitals to deliver a full range of safe and effective care provision. The report recognised that theatres were unable to perform major surgery, plus accident and emergency and ward areas require the option of transferring patients to higher levels of care (Figure 4).

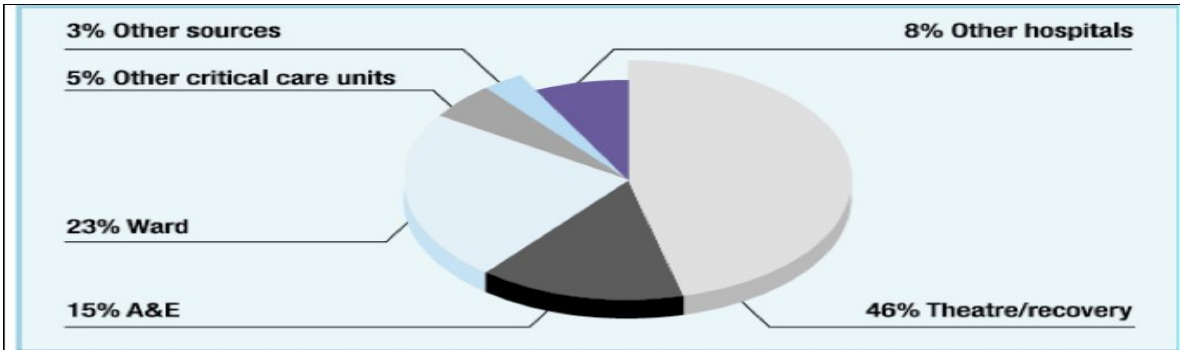

Figure 4. Sources of admission to critical care (Audit Commission, 1998)

The outcome of this report was the rapid expansion of critical care provision, with the number of beds increasing by 35% between 2000 and 2006, and by December 2013 there were 3962 adult critical care beds in England (NHS England, 2015); this is predicted to continue to increase by 4% per annum (ICS, 2015). Despite this increase in resources, there remain high levels of patient occupancy, which demands a highly skilled medical and nursing workforce (ICS, 2015).

Critical care medicine has evolved over the 25 years driven by research studies establishing a robust evidence-base for care. This culture has many challenged accepted practices such the pulmonary artery catheter use, blood and albumin transfusions (Vincent, 2013, Kelly et al., 2014). This knowledge creation has influenced the development of critical care nursing practice. Critical care medicines' drive for research-based interventions has led to the standardising of approaches to patient management to improve patient outcomes, such as care bundles for sepsis and ventilatory care, and protocol driven guidance for fluid replacement (Horner and Bellamy, 2012; Vincent, 2013).

Contemporary critical care nurse education needs to align itself with this culture of evidence based practice, providing students with the knowledge and skills to critically examine the research base underpinning the care they provide, and where necessary challenge existing practices. For nurses who are new to the critical care environment, the technology involved, combined with the increase in their technical roles can take precedence over delivering even basic nursing care (Kiekkas et al.,2006; Tunlind et al., 2015). Critical care nurse education needs to

recognise this, and support students to develop the insights, knowledge and skills required to ensure that the patient is viewed as a person, an individual, who is the central focus of their care.

Changing patient demographics

In 2000 in a significant development, the Department of Health redefined the common interpretation of 'critical care', which had been previously used to describe care that was provided in the physical locations of ICU or HDU. The paper *Comprehensive Critical Care: A Review of Adult Critical Care Services* described the provision of care to critically ill patients as a hospital-wide service, to be planned and delivered around patient need, rather than a physical location (Department of Health, 2000). It recognised that many critically ill patients become critically ill outside the confines of critical care units, in areas such as wards, accident and emergency or elsewhere. The strategy viewed critical care provision as potentially hospital wide, 'without walls', based upon the acuteness of illness, rather than a physical location.

The outreaching of critical care provision according to patient need has become normal practice. It is needed because of the increased complexity of patient illness as people live longer, frequently with chronic diseases and multiple co-morbidities. Additionally, increasingly complex medical and surgical interventions mean that patients are far more likely to become seriously ill, and as a result require access to critical care provision (NICE, 2007; Elliot and Coventry, 2012). Given the limited number of ICU and HDU beds, many patients that were traditionally cared for on HDU, are now being cared for in general ward areas

(Elliot and Coventry, 2012). This view of critical care as without walls is an important concept, as it emerged at the same time as the original CCP in 2001, and provides insight into why the programme combined acute and critical care. It represented an inclusive approach to critical care education, sharing ICU expertise with nurses working in acute areas, to improve their ability to recognise and manage the onset of acute illness and provide safer care. The motivations for this may have been good, but the wisdom of such an inclusive approach from an educational perspective was highlighted as highly problematic by this study.

Critical care provision in Greater Manchester

The Greater Manchester conurbation has a population of 2.68 million (Office of National Statistics, 2011), including 0.6 million children (Brizell, 2013). The nine critical care units within the region provide a total of 228 beds (NHS England, 2015) for over 2 million adults, a ratio of 1 bed: 8,771. It is unsurprising that the occupancy rate of the larger units is 96-100%, and these rates are for September, outside the busier winter period. This provides insight into how dependent the provision of acute healthcare is on these on specialised areas and the unrelenting workforce pressure that exists there.

Critical Care Units	ICU / HDU Beds	Occupancy rate for September 2015
Central Manchester (CMFT)	50	96%
Pennine Acute Trust	34	85.3%
Salford	45	100%
Stepping Hill (Stockport)	13	76%
Tameside	9	77%
Christie	8	50%
South Manchester (SMUHT)	40	97.5%
Wigan	11	63%
Bolton	18	83%
	Total: 228 beds	Occupancy rate: 77.5%

Table 1. Critical care provision in Greater Manchester (NHS England, 2015)

The higher number of critical care units within the region provides an indication of the high nurse staffing requirements for Greater Manchester, with qualified critical care nurses at a premium. The MCCC was established to ensure that the local critical care nursing workforce needs for all these units were met by the delivery of a regional CCP. The Critical Care Network has provided strong leadership in ensuring that this programme remained owned by their educational arm, the MCCC, working in collaboration with MMU to ensure the CCP retained its fitness for purpose. However, like all educational programmes, the CCP needs to meet the changing needs of local service delivery and of the nurses that it is seeking to educate.

Critical care nursing

Critical care patients require specialist monitoring and treatment, using equipment and staff who are highly trained in caring for the most severely ill

patients. The World Federation of Critical Care Nurses (WFCCN) provides a definition that encapsulates the complexity and holistic nature of this speciality:

> A critical care nurse is a registered practitioner who enhances the delivery of comprehensive patient centred care, for acutely ill patients who require complex interventions in a highly technical environment; bringing to the patient care team a unique combination of knowledge and skills. The roles of critical care nurses are essential to the multidisciplinary team who are needed to provide their expertise when caring for patients and their relatives (WFCCN, 2005).

This represents the comprehensive nature of patient centred nursing care, capturing the highly technical nature of the area, while emphasising the role of the nurses in liaising with the multidisciplinary team to care for patients and relatives. Safe nurse staffing numbers for critical care areas are determined by national standards provided by the Intensive Care Society. These national standards (NHS England, 2014; ICS, 2015) are outlined below, and illustrate that these areas require higher levels of staffing, with minimum nurse ratios of 1:1 in ICU and a minimum of 1:2 in HDU.

- Level 3 patients (intensive care) 1:1 minimum nurse patient /ratio
- Level 2 patients (high dependency) 2:1 minimum nurse patient /ratio
- Supernumerary nurse in charge of shift
- A minimum of 50% of registered nurses will possess a post registration award in critical care nursing (moving to 70% over time)

The ratios have been standard practice for many years (BACCN, 2009), but are especially important given the current pressure on the NHS budget, and demand for critical care beds. It is widely acknowledged that maintaining this specialised workforce is costly (ICS, 2015), but these standards provide an important bulwark in maintaining the quality and safety of care.

The availability these beds and quality of the subsequent care is reliant upon the presence of sufficient trained critical care nurses. There is evidence that previous attempts to reconfigure this workforce to reduce staffing budgets in this speciality resulted in negative patient outcomes (European Federation of Critical Care Nursing, 2007). Coombes and Lattimer (2007) reported a correlation between nurse staffing levels and the incidence of adverse events. West et al. (2007) demonstrated that having sufficient nurses per bed was a key factor behind achieving increased survival rates, which is unsurprising given the requirement for close monitoring and interventions when caring for the critically ill.

There remains a national shortage of qualified critical care nurses (Williams and Palmer, 2013), which is unsurprising given the national nursing shortage, combined with the scale of these services within the region. The high nurse to patient ratio means there is a constant requirement in the UK to ensure sufficient trained critical care nurses. In Greater Manchester, the nine regional NHS hospitals need sufficient qualified nurses to safely staff their critical care units, competing with each other and global healthcare providers to maintain or expand critical care provision.

To sustain this workforce, critical care units rely on developing the knowledge and skills of nurses, who have little or no previous experience of this specialism (Gohery and Meaney, 2013). The delivery of safe and effective holistic nursing care in this environment requires general nurses to undertake prolonged education and bedside training. The transition from general nurse to one who is confident working within critical care is challenging due to the increased technology, specialist knowledge and skills, and the complexity of decision-making skill required for these critically ill patients. Gohery and Meaney (2013) recognised the scale of this transition, reporting that nurses often felt poorly prepared, lacking both the experience and core underpinning knowledge required to make safe clinical decisions within this environment. This provides context for the importance of having core national standards for critical care nurse education, as well as the challenge facing local education providers in supporting sufficient nurses in successfully making this transition.

Critical care nurse education: historical basis for a collaborative programme

The demise of the English National Board[2] in 2002 left a void, with no nationally recognised critical care nursing qualification replacing the one previously provided by the English National Board. This resulted in variability of standards and awards, affecting transferability of qualifications and mobility of the nursing

[2] The English National Board monitored the quality of nursing and midwifery education courses, and maintained the training records of students on these courses. These functions were taken over by the NMC in 2002, but they did not kite mark or validate national qualifications.

workforce (CC3N, 2011). When the English National Board (ENB) was disbanded, the statutory responsibility for setting the standards of critical care education were passed over to local higher education institutions. The ENB 100 had set a recognised national benchmark that developed sufficient competent critical care nurses, and when this course ceased, a void developed.

Bradshaw (1998) described this period as being based on a 'romantic culture', which failed to provide measurable standards of competence for clinical practice. Nurses were gaining academic qualifications as critical care nurses, but lacked the knowledge and skills to do the job with confidence and competence. It was the recognition of this void that led to the establishment of the MCCC, who developed the Manchester CPP in 2001.

The programme was designed by clinical leads from critical care nursing teams across Greater Manchester, pooling their expertise and materials to develop a shared programme. Acting upon the recommendations from *Comprehensive Critical Care* (DH, 2000), this was a competency[3]-based training programme. It contained no academic component, and was taught by practice-based educators, with a focus solely on developing competent staff. This represented a strategic and cultural rejection of university based courses, which were viewed as overly theoretical, taught by staff who were often no longer current and with too much focus on achievement on academic attainment.

[3] Competency is defined as the ability to do something successfully or efficiently (ICS, 2015:139)

Universities had ceased to satisfy workforce development needs at a time when critical care facilities in the UK and Manchester were being expanded rapidly. The Manchester Critical Care Programme was effective in providing sufficient competent critical care nurses to satisfy workforce needs for a decade. The characteristics of the Manchester Critical Care Programme 2001-2011 are detailed below:

- Delivered by 11 PBEs (one per critical care unit)
- 100 students undertaking the programme annually
- Locally shared 12 month curriculum and award* (no time limit for completion)
- Locally developed competencies covering acute and critical care*
- Diploma or non-academic route*

By early 2011 it was clear that the competency-based Manchester Critical Care Programme did not meet new National Standards for Critical Nurse Education (CC3N, 2011) in the areas denoted* above and required change. The education changes resulting from the Bologna project and Tuning Report that had raised the educational standards for pre-registration nurse education to graduate level were now influencing critical care nurse education. The European Federation of Critical Care Nursing Associations (2007) and the World Federation of Critical Care Nurses (2005) recognised the need for educational programmes to provide nurses with transferrable knowledge and skills to practise in this specialist area. In 2011, the national Critical Care Nurse Education Forum published the National Standards for Critical Care Nurse Education, including the National Competency Framework for Nurses (CC3N, 2011). A CCP curriculum was developed in

collaboration with MMU to meet these standards, providing a validated, transferrable award in critical care nursing delivering:

- 60 credit Certificate or Post Graduate Certificate in Critical Care (level 6 or 7)
- National core curriculum of theoretical knowledge
- Successful completion of core critical care competencies (step 2 and 3)
- A timeframe for completion within 12 months (up to a max. of 2 years under extenuating circumstances)

Source: National Standards for Critical Care Nurse Education (CC3N, 2011)

The partnership between MMU and MCCC was symbolic in representing an equal partnership between a university and practice. It offered the opportunity to heal the fractured relationship that had developed locally between academia and service provision within this speciality. The written programme documentation was straight forward to achieve, containing all the CC3N (2011) criteria required to deliver a university validated nationally transferrable qualification to satisfy local workforce demand by delivering circa 100 critical care nurses per annum. A 60 credit CCP delivered by the MCCC and validated by MMU commenced in September 2011.

Financial and political drivers

This collaborative CCP was a cost effective and politically viable solution to local critical care education provision. It was delivered within the context of financial restraint, which was required given the cost of a full-time university course (120

credits) at graduate level (£9000 per year), which equates to £75 per credit. The equivalent cost of the 60 credit CCP would be £1800 per student making this a very expensive route for the Critical Care Network to fund given large student cohorts. The collaboration offered the network a means of reducing these fees to a fraction of this cost at £300 per student. In this model, the MCCC were supported to develop and deliver their programme, which was validated and quality assured by MMU. This collaborative approach widened access to critical care education in a cost-effective manner that allowed the network to meet its workforce requirements.

It provided MMU with the kudos of being the lead university within Greater Manchester delivering critical care education. Importantly from a political perspective, the ownership and delivery of the CCP remained with MCCC. It was important, given the historical troubled relationship between academia and practice in critical care education, for control over the programme, including delivery of the core content and assessment of the competencies within practice, to remain under the control of the MCCC. It appeared a win-win collaboration, albeit one that posed ongoing challenges that raised serious questions relating to the role and value of higher education within practice-based education.

This chapter will now focus on examining the value of academia to critical care nursing education. This will include consideration of how the critical care education curriculum can best support student learning, developing knowledge and skills that enhance both their academic development and their clinical practice.

The Transition from Competency-based Training to Higher Education

In hindsight, the changes we made to the CCP in 2011 were superficial. They were made mainly to the structure of the programme, with little change in terms of the curriculum, other than input from university academics at induction or in moderating student academic assignments. The development of a new written programme did not address the deep underlying cultural and educational differences that seemed to exist between the two organisations. Two examples of this were differing pedagogical approaches to teaching and learning, and a failure by the PBEs to recognise the importance of underpinning teaching materials with a current evidence base. In short, at the start of this study in August 2013, it seemed the PBEs and university link lecturers had very different perspectives, with the poor level of student academic performance a reflection of a curriculum that was suitable for supporting competency-based training, rather than level 6 and 7 higher education.

An initial reaction was for some PBEs to question the requirement for graduate level study for students with lower academic ability or inclination. However, this ignores the reality that the minimum academic standard of level 6 exists for any UK nurses wishing to gain specialist post registration qualifications (NMC, 2001), as well as the National Standards for Critical Care Nurse Education (CC3N, 2011). A non-academic or diploma level option would not provide a nationally recognised qualification. In view of the historical context, and the politically sensitive relationship with the MCCC, the level and necessity for an academic component and its value to critical care education was explored as part of this study.

This experience has highlighted that curriculum is more than a document; it is what happens in our classrooms (Stenhouse, 1975:195) and in the case of the CCP, through assessment of competence within practice. It represents more than what is listed to be taught (Moon and Murphy, 1999:10), rather it imbues the core values of those who are delivering it, and in doing so embodies the 'totality' of the learner experience (Kelly, 1999:7). The people who determined the look and feel of the curriculum were the PBEs, as they managed the study day content and classroom delivery. The introduction of the new collaborative programme in 2011 required the PBE to make a rapid transition from vocational training to delivering higher education. The progress the PBE have made with this transition would be encapsulated within the study day teaching materials and teaching style, because these represent their shared values.

Vocational education in British healthcare is the traditional approach used in the training of doctors, dentists and nurses, learning through experience within practice (Hyland, 1999). Teaching on the CCP has continued to be dominated by lectures, during which PBE transfer the knowledge needed to underpin competent practice. The students were assessed by mentors at the bedside using criterion referenced standardised clinical competencies. The focus on educational input relates directly to practice (which is essential), but as Storey et al. (2002:4) explained 'The competent practitioner must have the ability to problem solve, think critically and utilise effective evidence on which to base their practice.'

The study days focus on developing students' knowledge using a body systems based approach (respiratory, cardiac, renal etc.). The PBE are rooted in practice, the students learning from expert nurses with recent, credible practice experience, and the use of clinical competencies remains essential in ensuring staff are competent. These elements are strengths of the CCP, grounding the curriculum in clinical practice and maintaining clinicians' local ownership of their junior nurses' training. Critically, my suspicion was that the study days were not underpinned with a current evidence base and teaching was not sufficiently engaging the students in higher order thinking activities such as problem solving, to critically consider their everyday nursing practice. Such higher order thinking was required to develop intellect that relates both to the completion of academic assignments and the development of their practice.

Competency-based training is useful as an instrumentalist ideology (Armitage et al. 2007), rooted in the pragmatic needs of health services and educational providers to assure the standard of student clinical attainment. However, nursing has progressed, and contemporary critical care education needs to deliver nurses who are not only clinically competent, but also highly educated. The terms 'training' and 'education' are often used interchangeably, and in nurse training or education programmes, and the choice of which term to use could be considered one of semantics. However, there are important differences in the knowledge and skills each is seeking to develop.

The Collins English dictionary (2018) defines training as 'the process of learning the knowledge and skills that you need for a particular job or activity'. The Oxford

English dictionary (2018) defines education as ‘the process of receiving or giving systematic instruction, especially at a school or university, an enlightening experience’. Critical care education has elements of training and behaviourist theory, with students spending most of their time working and learning with the support and guidance of their mentors to become competent nurses. Training is useful in areas such as resuscitation where a pre-set rapid response to a clinical emergency is required, or when responding to a blocked tracheostomy tube within critical care. However, as Gibbs et al., (2004) notes, training is only one aspect of education, and the CCP needs to provide students with a broader educational experience.

Education, particularly, higher education represents a more aspirational set of values than training a person to perform a specific job. The CCP curriculum involves the study of critical care nursing, in a way that develops our students’ higher order thinking skills, drawing upon a broad range of professional knowledge, that can be applied to a range of clinical contexts. As Dennis (2007) explains, we need practitioners who have sufficient understanding of their situation to be able to properly diagnose problems, and then to recognise improvement or increasing severity of situations when caring for critically ill patients.

This learning extends beyond the specific context of bedside care, to include the development of key transferrable skills such as critical thinking, and high standards of written and spoken communication; all attributes which will support the student within their immediate career and beyond. Mortimer (2015) provides

a useful analogy in understanding how education and training align within the CCP, associating education primarily with the academic aspects of the course, and training with the on the job aspects. The 'academic' aspects include the students' total learning experience within the university, which in this partnership, means the learning experience at the MCCC. Critical care nurse education must provide students with higher education that compliments and builds upon the training they receive within practice.

This need for higher education is echoed by the local NHS trusts, who increasingly require their senior nurses to possess degree or master's level qualifications to secure band 6 and 7 posts. To remain relevant to its service users, the CCP needs to meet critical care nurses' personal and career aspirations, which means it (including the educators who deliver it) need to evolve to embrace and deliver higher education.

The demand from employers for graduate or master's level qualifications such as the CCP has placed increased pressure on individuals to undertake academic study. However, the raising of educational standards has generally been positive, widening access for existing diploma students to engage in graduate education. Secondly, master's education is likely to be the first choice for an increasing number of graduate nurses given that all UK nurses will qualify with a first degree by September 2014. This raising of the educational bar for staff wishing to progress in healthcare feels like it has been imposed strategically in a top down organisational manner. To move forward with and embrace this change, both tutors and students need to understand the rationale that underpins it. This is

essential in order that the MCCC partnership with MMU develops a clear vision of what the future critical care nurse will look like. To understand the foundations for this transition, we need a shared perspective of graduate and master's education.

Higher education: what are universities offering nursing?

What is it that sets universities apart from educational providers such as the MCCC and is there any evidence the attainment of graduate education improves clinical practice? The Open University (2014) signposts what it is offering customers very clearly. They describe how the courses will help you develop key transferable skills which will be of lifelong benefit, including 'developing skills of critical analysis, honing argument and analysis that are highly valued by employers.

This level of clarity is required to create a shared vision for students and teaching staff. If all parties do not possess shared clarity of what they are seeking to achieve, then attainment is likely to be made more difficult or even confusing. It was therefore important to learn if students and tutors possessed a shared view of the purpose of the CCP, the knowledge and skills it is seeking to develop, and the value of these skills.

Bloom's (1956) thinking triangle illustrates the development of higher order thinking skills, from the base levels of knowing information to being able to apply, analyse, synthesise and evaluate ideas. A key aim of higher education is to assist people to develop their intellect, and in the context of nursing, this means

contributing to the development of their decision-making skills, otherwise it is an academic exercise, without clinical relevance. Critical care nursing students undertaking the CCP at degree or master's level need to develop a good depth of knowledge, and demonstrate critical thinking, analysis and evaluation of current evidence, that could be used to inform their clinical judgements. Critical thinking is a central feature of degree and master's academic practice and a characteristic that is most commonly lacking in weaker academic assignments. This warranted greater consideration of why critical thinking is considered so important and how we help our students to learn this highly valued skill.

Critical thinking

Critical thinking is considered essential for democratic citizenship (Chabeli and Mangena, 2005), with the theory that educating people to develop these skills will result in people who are rational and objective, viewing things with greater clarity. Elder (2007) argues that through learning to think critically we develop and begin to practise 'fair-mindedness', contributing to the development of more rounded and wise individuals.

Ellis (2011:127) explains that 'critical thinking is about clarity and rationality of thought'. It is about honing our understanding by systematically bringing together threads of an argument in a logical way to solve problems and create new understanding. The word 'critical' means more than making criticism, a negative judgement; it involves looking at the merits and weaknesses of a practice, which might, within nursing mean considering how we can best manage a patient's pain. In doing so, the nurse will need to consider the patient's holistic healthcare needs,

before exploring current practice, with the goal of learning how to improve care (Edwards, 1998:160). Importantly, this includes an evaluation of the current evidence-based theory, followed by a rational conclusion that identifies contextualised best practice. A student that concludes that high concentration oxygen is always of benefit to patients has not demonstrated sufficient understanding and application of the evidence (see British Thoracic Society guidelines, 2017) that is expected at level 6. Consequently, they are not demonstrating the level of knowledge required for safe practice.

Does degree and master's level education improve nursing practice?

University education in the UK reflects the social and political climate in which it operates, and in the context of critical care nurse education, the financial constraints of the NHS. The pressure placed on NHS trusts to achieve 'efficiencies' has been raised as a key factor by the Francis Report (2013) and Keogh Review (2014), with both making direct associations between the reduction in nursing numbers and reduction in the quality of patient care.

There is some evidence that this is not simply a question of the number of registered nurses, but is also influenced by their level of education. Research in the United States of America (Estabrooks et al., 2005; Kutney-Lee et al., 2013), and more recently in Europe, indicates that degree level education for nurses is associated with a reduction in preventable hospital deaths (Aiken et al., 2014). This research reported that a 7% increase in the proportion of nurses with a bachelor's degree was associated with a 10% decrease in patient mortality, which they attributed to improved decision making and application of evidence-based

practice. They noted hospitals with 60% of nurses educated to degree level, had a near 30% reduction in mortality rates, when compared to hospitals with only 30% at degree level (Aiken et al., 2014). A systemic review by Audet et al., (2018) evaluated the association between the level of nurse education and the risk of mortality and adverse events in acute care hospitals between 1996 and 2017. This review concluded that higher levels of nurse education were associated with lower risk of both 'failure to rescue', and mortality rates in 75% and 61% of reviewed studies respectively.

The focus on mortality rates as a measure of impact has been criticised for a lack of sensitivity to general and critical care nursing issues (Blegen, 2006; Numata et al., 2006). The inclusion of other quality measures such as the earlier detection of acute illness, or the reduction in adverse events may better reflect improved nurse surveillance, decision making and interventions (Needleman and Buerhaus; 2007). A study by Yakusheva et al., (2014) in the United States used a retrospective analysis of 8526 adult medical-surgical patients matched with 1477 nurses to evaluate the impact graduate nurses on mortality, length of stay and hospital readmission. The results demonstrated that patients receiving ≥80% of their care by graduate nurses had significant impact on all three care outcomes, with lower mortality rates, a 1.9% shorter length of stay, and lower odds of a 30-day readmission when compared to patients exposed to a less than 80% ratio of BSN nurses.

These studies provide some evidence that graduate level nurse education is a significant contributing factor to the quality and safety of healthcare, but further

longitudinal studies are needed to better evaluate and understand these associations. Healthcare, particularly within areas such as critical care is very complex, with many variables determining patient outcomes, making it very difficult to definitively evaluate the impact the academic level of nurse education has on the quality of patient care. Subirana et al (2014) recognise this complexity, including the role that nursing experience and the level of education have upon the exercise of clinical judgement in patient monitoring, early detection of complications and timely intervention.

There is sufficient evidence to indicate that degree level education does improve important patient outcomes. The research by Yakusheva et al., (2014) illustrates that the ability of the CCP to deliver sufficient numbers of graduate qualified critical care nurses is likely to be of key importance in assuring the quality and safety of patient care within Manchester's critical care units. The evidence presented within this section provides a timely reminder that the current reduction in government funding for critical nurse education is not only divergent from the recent direction of nurse education, but may adversely impact the quality of national critical care provision.

Implications for critical care nursing

The development of higher order thinking skills has been linked to the quality of clinical judgement during decision making, supporting the transition to bachelor's and master's degree level critical care nurse education. The learning outcomes present at these levels are congruent with the European Tuning project's (2009:20) emphasis on nurses being competent decision makers, accountable

for their decision making, which should be based upon critical thinking and current evidence. There was recent historical government support for the graduate status of nurse specialists and leaders, with the prime minister (DH, 2010:103) stating that a ‘degree must become a requirement for all nurses in leadership and specialist practice roles by 2020’.

These intellectual skills are important to critical care nurses, given the need to rapidly interpret large amounts of information in very complex and dynamic situations, using clinical judgement to make informed reasoned decisions (Lyte, 2008). All nurses must practise confidently, being aware of their limitations in order to deliver safe and effective care (NMC, 2015). Nurses need to develop sufficient experience and knowledge within critical care to be able to fully understand the complexity of patient illness. Benner (1984) recognised that this takes time, which is why the CCP has steps 1-3 competencies, to help students develop from novice to competent in a structured and organised manner. Classroom teaching can also enhance this self-awareness by providing opportunities to discuss case studies, and to practise making rational decisions in relation to a diverse range of issues: technical, professional, legal or ethical.

In achieving the development of these skills, the work of Richard Paul is useful because he provides a very clear summary of the skills we are seeking to help our students develop in his ‘universal intellectual standards for thought’ (Elder, 2007). He identifies these intellectual standards as the ability to reason, question, analyse and rationalise with clarity, accuracy, relevance, precision, depth, breadth, significance and logic. These are the core skills we are seeking to

develop in our nurses at graduate or master's level. Worrell and Profetto-McGrath (2006) expand on this by adding that creative thinking flows from the development of this level of criticality, as once we understand something, we can explore new ways of working, which fuels service improvement and change. Reference to these skills was useful in succinctly clarifying the standard of the intellectual skills we expected our students to develop and explaining their significance in relation to enhancing practice. This research provided an opportunity to engage with students over a sustained period to evaluate their perceptions of critical care education, exploring their collective views on current and future provision, alongside monitoring the self-reported influence of the programme on their clinical decision making.

It is noteworthy that the National Standards for Critical Care Nurse Education (CC3N, 2011) neither provides an explanation as to why academic level 6 and 7 was chosen, nor outlines the performance outcomes the adoption of this standard of higher education was expected to bring. This may be because the framework is practice focused and service driven, developed by the lead nurses in this area in conjunction with academics. The nurses have developed the competency framework and the academics advised on the appropriate academic level to be achieved. This was evident from pre-study discussions with a lead nurse involved in the formulation of these national standards, who could not explain why the universities had insisted on graduate or master's level. This lack of a fundamental understanding is significant. A shared vision regarding the role and level of academic study in developing future critical care nurses should be at the heart of planning and delivering a well-balanced curriculum. It was not evident this shared

understanding existed within the staff, students or practice leads, which provides insight into why there were problems with the delivery of the CCP. To work together as a team, we need to share a common educational goal. The attainment of this shared vision provides an important backdrop for this education study.

Implications for the MCCC

The transition towards delivering degree and master's level education is challenging for the MCCC, because 70% of the students who enrolled in 2013 were diploma level. A suspicion was that many of the nurses who were struggling to make the transition from diploma to degree study were either weak academically or simply lacked motivation to study. The issue of motivation applies primarily to the 30% of students who were already graduates, and may have been reluctant to place too much time and energy undertaking further level 6 study.

Along with better understanding of what motivated students, there was the question of how to support academically less able students (who may have struggled to achieve diploma level study during their nurse training) to achieve a graduate standard, whilst at the same time supporting the more able students to reach their potential. Educational theory suggests student motivation is linked to attainment. Sidorkin (2012:96) explains, 'education is mainly the result of the learners' own efforts', with education merely providing organised and structured learning opportunities. The challenge for the MCCC was to ensure the outcome was a reliable production line of skilled critical care nurses, whilst raising the educational attainment. Sidorkin's assertion that education is less about what the teacher does to the student, and more reflective of the student's application and

desire to learn, provided a useful reminder that we needed to better engage with and understand our students, exploring their motivations and learning expectations. This will form a key feature of this research, to become better able to support students to be successful in their studies.

What actions should be taken to help the many existing diploma level nurses who are currently struggling to achieve this standard? A non-academic or diploma level option would be viewed as second rate, yet may be preferable and more attainable for academically less able students who struggle to achieve a pass. The answer to this question is complex and it will be interesting to learn the views of all the key stakeholders. The answer is likely to provide a valuable insight into their views on the role and value of academic study to critical nurse education.

It would have been easy to adopt a defensive stance, blaming poor student performance on the quality of the students, as Biggs states (2003) 'because these students are a bit thick'. Biggs explains that this is the most basic and easiest reaction to teaching failure, and suggests the need to adopt a more critical and reflective response to enhancing teaching and learning. The MCCC has been isolated from higher education and has not recognised the changing intellectual needs of its students or clinical practice. Teaching was heavily reliant on didactic Powerpoint presentations, with the contained information based upon tacit knowledge, rather than generating any robust discussion of applied current clinical evidence. This teaching pedagogy positions students as passive recipients of knowledge, rather than stimulating and engaging students by reflecting on and questioning their practice. Biggs and Tang (2011), Jones (2012)

and Baumfield et al. (2013) support this assertion, arguing that developing higher order academic skills requires the adoption of an approach that engages students as active participants in constructing their learning. In the prevailing classroom environment, it is unsurprising that students possessing weaker academic ability mirror their learning experience by presenting summative work that is descriptive, lacks critical application and is often poorly referenced.

The exact nature of the changes required to deliver a curriculum that better supports students to develop their intellectual skills, whilst not detracting from the core objective of delivering highly skilled critical care nurses, is less clear at this stage and requires further exploration. The key concept is that higher level thinking can be learned and is necessary for nurses to make the difficult transformation from the role of junior nurse in critical care to senior nurse within critical care (Distler, 2007:54). As the CCP is the qualification required to achieve this progression, it is important we understand how the curriculum will support students to become better critical care nurses, with the transferrable lifelong skills to enhance their careers.

Chabeli and Mangena (2005) describe strategies that can be used to overcome obstacles in the facilitation of critical thinking in nursing education. They identify the following three issues relating to programme structure and quality of teaching, which resonate closely with the some of the problems identified with the CCP:

1. *Inappropriate selection process and poor educational background of students*. Some of the PBEs were convinced that because attendance of the CCP was

a requirement for nurses working within critical care, many students lacked the personal motivation required to successfully complete the programme. It was unclear if this was a significant factor in student performance. Secondly, PBEs were reluctant to support students to undertake the CCP at master's level, because if a student failed the programme, they would not achieve the critical care nurse qualification; impacting workforce planning. The number of nurses wishing to undertake the CCP at master's level at the start of this study was initially only 1–2 per cohort, but this was nevertheless a contentious area, as students who had achieved a good degree classification, not unreasonably, expected the opportunity to challenge themselves. The views of the critical care unit lead nurses were of interest on this topic and were sought as part of this study.

2. *Teachers' lack of knowledge.* The majority of PBEs are qualified clinical educators, possessing the Post Graduate Certificate in Education (PGCE). However, when the CCP commenced in September 2011, none had previous experience of teaching or assessing within higher education. The marking team consisted of five PBEs who held graduate / master's qualifications, and supported the students with their academic assignments. Utilising a small marking team had the benefit of maintaining consistency, but negatively it meant that most PBEs were not involved in the academic component of the course, and therefore remained remote from it. The programme was changing, but the educators were for the most part the same people who delivered the previous course, and in terms of programme delivery, little had changed for many of them.

3. *Use of teaching and assessment methods that do not facilitate critical thinking in a way that can help students link theory to practice and assist in the development of decision making in practice*. The study days relied heavily on largely unreferenced slide presentations. Observation of the study days would provide an accurate picture of current practice across the programme and the opportunity to work with the educators to help them make greater use of active learning strategies.

The Issue of Poor Curriculum Alignment

The reasons why a significant number of students on the CCP were consistently performing to a poor academic standard were complex. They reflected a divergence between the stated learning outcomes in the 2011 CCP and what was delivered in the classroom. As Stenhouse (1975) recognised, the curriculum is more than the CCP documentation; it is what is really happening in our classrooms. The divergence indicates a failure by me and the managers at the MCCC to understand the size of the challenge required to move the PBE from a 'practice' focused mind and skill set, to effective teachers of higher education. It provides an example of how it is easy to change a curriculum on paper[4], but for the teaching to move to graduate or master's level, a very substantial change in teaching methodology and culture is required. Bridges (2002:3) noted, it is often not the change, but the transitions that cause the greatest problems, particularly

[4] Armitage et al. (2007:164) describe the curriculum as 'written and public plans associated with formal learning'.

getting people (including myself because of undertaking this research) to change their learned or normal behaviours, and move from their comfort zones.

There was a need to evaluate the delivery of the curriculum and collectively learn how to improve the student learning experience. A central supposition was that the current curriculum and culture remained aligned to the original competency-based programme. The learning outcomes and forms of assessment had changed, but the teaching remained focused on developing clinical competence rather that intellectual knowledge and skills.

Biggs (2003) describes this phenomenon as a failure to achieve 'constructive alignment' in the curriculum. The 'constructive' refers to what the learner does to construct meaning during their learning experience, and 'alignment' to what the teacher does in providing the students with the appropriate learning activities that will facilitate their achievement of the learning outcomes. To become constructively aligned, the curriculum must be rebalanced to support students to achieve their academic, as well as the clinical learning outcomes. To achieve constructive alignment there needed to be a more holistic and cohesive team approach, reflected in a curriculum and teaching culture that was focused on supporting students to achieve all their learning outcomes. The adoption of a constructivist pedagogy, encouraging active learner participation, using teaching methods such as problem-based learning should improve the learning experience and enhance educational attainment.

Biggs (2003:74) offers a great deal of optimism that this belief is well founded, stating that good teaching is 'getting most students to use the high level cognitive processes that more academic students use spontaneously'. He explains that traditional methods such as lectures do little to facilitate the higher educational processes we are seeking to develop in the CCP. Lectures work well with the most intelligent students who bring their existing higher order thinking skills with them, but do not support the development of these skills in less academically able students.

We all learn slightly differently, but some generic themes apply. Most of us can retain only a small fraction of what we read and hear according to Edgar Dale (1969), but this increases sharply if we discuss these matters with others, and greater still if they can be linked closely to what we are doing. The students were adult learners and qualified healthcare professionals, and while often relatively inexperienced in the context of acute and critical care, they had varied and valuable experiences to share with their peers.

This raises the question of whether the study days were structured in a manner that supported the retention of information and development of higher order learning. The PBEs predominantly use lectures, which position the students as passive recipients of knowledge. The reason for this is unclear, but Chabeli and Mangena (2005) note that many teachers prefer a didactic style and stick to their preferred teaching behaviour as a safety blanket.

Higher education must promote the utilisation of the thinking skills required to develop a critical perspective and synthesis of ideas (Biggs and Tang, 2011; Jones, 2012). Such critical perspectives can then be used to support clinical reasoning and decision making in practice (Hwang and Kim, 2006). The adoption of new ways of teaching is challenging, and this may have been the reason why little appeared to have changed in the way the CCP was delivered.

At the heart of this issue is whether the CCP was providing 'training' or 'education'. Nurses and doctors are still referred to as undertaking training, but a quick review of dictionaries demonstrates major differences. 'Training' is the process of 'bringing a person to an agreed standard of proficiency' (Collins English Dictionary, 2015) or instruction associated with 'imparting a skill' (Oxford English Dictionary, 2014). 'Education' pursues a far broader aspiration, defined as 'the development of personal knowledge or understanding', which includes 'growth of character, moral and social qualities' often associated with transferrable generic skills (Oxford English Dictionary, 2014).

Johnson-Freese (2012) provides useful insight into this issue in her review of training versus education in the US military. She noted that the military used instruction techniques to convey rigid materials, using standardised presentations to transfer the pre-set knowledge, which has many similarities to the CCP. Johnson-Freese recommended a constructivist educational approach to prepare learners to be analytical thinkers and problems solvers, developing deeper understanding and ability to synthesise information. Importantly, she argued that education provides learners with the opportunity to develop 'intellectual agility',

which is similar to the ‘actionable intelligence’ described by Campbell et al. (2007). Higher education should provide lasting professional benefits and be useful within and beyond the immediate context of a specific circumstance or workplace.

Students need to be exposed to educational experiences that enable them to construct their own knowledge and relate it to their practice, if they are to develop flexible intellectual skills (Biggs and Tang, 2011). Barak et al. (2007), supports this, concluding that the evidence is compelling that constructivist teaching methods significantly improve the development of the higher order thinking skills required to allow students to source relevant current information, and to assimilate, critically analyse and synthesise this to inform their practice and sustain arguments in a coherent and logical manner. In short, constructivist teaching methods enable learners to learn all the transferrable skills identified by the QAA (2008:18-19) at level 6 and level 7. It is the recognition of the value of these transferrable skills to professional development and improving clinical practice, regardless of the setting, that underpinned the momentum towards graduate level education.

Teaching these intellectual skills in higher education means catering for students with a range of abilities and motivation, and a realisation that the brighter students will probably pass with little or no support (Biggs, 2003). It is the less able students that need most support to develop these key skills. The evidence from the literature supports the need to realign the curriculum to a format which better supports the development of ‘actionable intelligence’ in our students, to provide

them with improved academic skills, and support the development of their clinical practice.

How Should We Teach Critical Care Nursing?

Despite many years as a university lecturer, this study made me re-examine my practice, analysing how my teaching has changed since I made my own transition from PBE at the MCCC. How has my teaching practice developed to facilitate the development of these higher order intellectual skills in my undergraduate and post graduate students? Do I rely on the traditional lecture too heavily or do I use alternative approaches? The answer is that I still use lectures to teach very large cohorts, but I also use methods such as discussions, problem-based learning and case studies, and all my materials are supported with a robust evidence base. These methods are briefly explored below, but they will be examined in greater detail during the discussion midpoint in the research findings because this is an authentic reflection of the action research process as it unfolded in this study. The time pressures created by the need to begin the study in line with the cohort start / finish dates meant that the search for new ways of teaching were incomplete before the study commenced. This may seem like a weakness, not knowing a clear answer to this question at this stage, but in hindsight it was beneficial in allowing us to engage in a genuine team approach to explore this together. On reflection, my 12-years' academic experience had provided a transition from training to teaching diploma, degree and more recently master's education; the PBEs had not lived through this experience and had not yet made this transition.

In 2011, there existed a general idea for improvements, based upon my experience in the use of problem-based learning (PBL). This student-centred style of learning focuses on providing students with problems to solve, providing a stimulus and self-motivation for learning according to Haith-Cooper (2000). It has been widely used in schools of nursing and medical schools, having been advanced in recent years around the world as an alternative to traditional lectures. PBL has three distinctive features according to Dahlgren et al. (1998), with the presentation to students of a reality-based situation as a starting point for student led enquiry, identifying their learning needs, before going away from the classroom to discuss and research these within groups over a period of weeks (Moust et al., 2005). This approach would be problematic given the structure of the study days and the external relationship with the students, but the general tenet remained useful.

PBL is advocated by Jones (2012), who recognises that adult students can easily become disengaged with lectures, and favours creating a 'thinking centred classroom', drawing on enquiry and reflection to relate theory directly to practice. This approach is supported by Hwang and Kim (2006), who found that a blended-learning approach of lectures and PBL was most successful in developing students of all abilities. This approach uses clinical scenarios to draw together information from lectures, creating a forum in which students interpret and analyse information based upon their individual and shared understanding, thereby linking new theoretical knowledge directly to clinical practice. An example would be the provision of students with a patient history presentation, which is termed a trigger:

Mrs Smith, a 74-year-old lady develops confusion and acute renal failure 2 days following a hip replacement. She is breathless, hypotensive, has a mild pyrexia, is oliguric and displaying signs of clinical shock. Her records show that she is receiving antibiotics and non-steroidal analgesia for her continued hip pain.

This type of scenario-based learning using patient histories works for students for three significant reasons:

1. It provides the opportunity to explore nursing issues by discussing them in group sizes ranging from 6 to 15 students (Moust et al., 2005). Scenario-based learning is student-centred, providing freedom to identify and explore key issues and care solutions (Haith-Cooper, 2000). Knowledge will be applied to realistic situations, assisting retrieval when in practice (Charlin et al., 1998).
2. Well designed and balanced scenarios place the patient and their family at the centre of care, something that is easily forgotten when seeking technical solutions within critical care. This helps students consider care holistically, which is central to success in their academic assignments and development as critical care nurses.
3. Working on a challenge as part of a group. By learning in a group, they benefit from the interaction and knowledge of their peers, working together as active participants to find care solutions that are meaningful to them (Dahlgren et al., 1998).

Problem-based learning can be challenging for the facilitator in terms of motivating students to participate as active learners, and then striking the right balance between guiding learning rather than directing discussions and dictating what students must learn (Andrews and Jones, 1996). Achieving this balance is recognised as difficult, as certain learning objectives still need to be met, and the students need to understand the reasons why 'Mrs Smith' became unwell and practise planning her nursing care (Haith-Cooper, 2000).

This type of group work provides a forum for students to learn from each other, with less able students benefiting from hearing from peers with greater academic skills and ability (Barak et al., 2007). It was intended that scenario-based learning would encourage students to engage more actively in constructing their learning and provide tutors with the opportunity to learn more of what the students were thinking (Jones, 2012). This greater engagement would provide more opportunity for feedback on the assignment criteria on an informal formative basis. An example would be to consider what constitutes a holistic patient assessment, or the required level of understanding of pathophysiology, rather than providing this via feedback on draft or summative assignments.

There is recognition that the enthusiasm and support amongst academics for the use of scenario-based learning (SBL) as an antidote to the lecture approach is not fully supported by quantitative research. Studies seeking to demonstrate increased student performance have achieved mixed results, and failed to demonstrate that when compared to other teaching methods such as lectures, SBL improves knowledge and clinical skills (Hwang and Kim, 2006; NHS

Education for Scotland, 2006; Worrell and Profetto-McGrath, 2006; Choi et al., 2013). However, learning autonomy, the development of critical thinking skills and contextual learning fulfil important functions by providing students with the opportunity to 'think like a nurse'; reflecting with their peers to make patient care decisions, which results in increased learner satisfaction (Williams, 2000; Barak et al., 2007; Biggs and Tang, 2011; Jones, 2012). This provides some evidence that the inclusion of case studies is likely to provide a broader and more engaging teaching strategy. Further, these are precisely the transferrable skills that The Council for Industry and Higher Education report employers are seeking from graduates (Archer and Davison, 2008).

High fidelity simulation would be suitable for developing the practical and human factors skills of critical care nurses. It is used on one study day, but there are not the physical resources to facilitate more frequent use of this method given the large number of students. The use of case histories based around a clinical scenario offers a theory-based form of simulation. The literature surrounding the use case histories was notably more contemporary than problem-based learning, suggesting it is a more current teaching strategy. As previously stated, the evidence supporting use of case histories is explored in greater detail following the second action research cycle, as part of the action research ongoing investigatory process.

Collaborative responsibility

The university and MCCC have a collective responsibility to assure the quality of healthcare education is addressing the needs of the students, and indirectly

clinical practice. A higher than anticipated academic referral rate during the first two years of the CCP meant that a quarter of students were unsuccessful in the first attempt at their assignment. The goal of 100% of students passing their assessments at the first attempt was unrealistic and many did succeed on a second attempt. However, such high initial referral rates were not only disappointing and frustrating to students and tutors, they placed an increased demand on resources to support these students at repeated attempts, remarking essays and presentations. It reflected poorly on the quality of the CCP and was symptomatic of wider underlying educational issues that required investigation. MMU, as the validating university, and MCCC who delivered the course had shared responsibility to investigate these issues and address any quality issues. The absence of a robust evidence base is not merely an academic weakness, it undermines the role of the CCP in safeguarding the quality of clinical practice.

As lead link tutor for the CCP I felt a professional responsibility to improve the academic quality of the course, whilst being conscious not to detract from the strength of the clinical practice component. Minor changes relating to student selection or support for the PBE marking team had not delivered improved results or a clear understanding of the key issues. The time was right to critically evaluate our curriculum in a more robust manner, exploring the views of key stakeholders and observing what was really happening in the classroom. This enabled the MCCC team, including myself and the other academics involved in the delivery of the programme to take a step back, separate fact from fiction and identify the most rational way forward.

Conclusion

The Greater Manchester critical care nursing programme is a key component in maintaining the capacity and quality of the region's critical care services. The social, political and professional drivers that shaped the development of the National Standards for Critical Care Nurse Education (CCN3, 2011) upon which this programme is based have been explored. The literature indicates that the graduate and master's level education, which underpins these national education standards, is congruent with a global trend towards increasing levels of academic attainment, matching the aspirations of nursing as a profession and nurses as individuals. The challenge was to collectively move the MCCC towards a position where it engaged with and listened to the next generation of critical care nurses. This repositioning was required to enable the organisation to understand the students' learning needs and meet the challenges that delivering this standard of higher education presents.

The review of educational theory supports the requirement for higher education to engage with students as active partners, applying critical thinking (informed by a current evidence base) to planning and evaluating bedside nursing care, and to the context of their academic assignments. The extent to which the local CCP curriculum was aligned to achieve these outcomes required extensive evaluation with key stakeholders to provide a basis from which to move forward and improve the quality of the programme.

In this way, critical care education becomes a true partnership with practice and higher education working together to deliver critical and actionable intelligence

that is meaningful and rewarding. It is a pedagogy that combines the pragmatic need for teaching grounded nursing theory, applied directly to the context of delivering excellent nursing care, and supports students in achieving their educational aspirations and to grow as professionals and individuals. This realignment of the curriculum required observing what was really happening in the classroom, listening to students, educators and practice, to create a collective vision of contemporary critical care education, as a basis for moving forward together.

Chapter 3. Methodology: Why use Action Research?

Chapter preview

This chapter presents the action research methodology, including the reasons for its selection within the context of educational research, and an exploration of how this approach aligns to my personal values. The research design is outlined, alongside the rationale for this inclusive participatory approach to seeking answers to the research questions. An approach designed to generate credible evidence and the new insights required to inform educational change. It concludes with a discussion of ethical considerations.

Theoretical Perspectives: Factors Influencing the Choice of Action Research

There are two basic purposes for research: to learn something or to gather credible evidence (Taflinger, 2011), and in the context of action research, to inform and change practice (Coghlan and Brannick, 2014). The methodology a researcher chooses to achieve this is reflective of their underpinning philosophy or view of what constitutes reality in the world (Bowling, 2014). This is often subconscious and the result of social and cultural conditioning (Bargh and Morsella, 2008). The use of mixed methods combines the pragmatic values of a practitioner operating within the positivist world of medicine, seeking a quantifiable version of the truth, with a desire for human insight to provide a deeper narrative upon which to base our understanding (see Giddings, 2006). This stems from the role as a nurse educator, taught to listen and understand the views of others and where possible meet their needs. It also fulfils a desire to take a professional lead and contribute to the generation of greater understanding in this field of education. The shortcomings of the CCP provided me with the opportunity to undertake action research, providing a reflective and challenging journey.

The research design involved educators, students and managers, in seeking to identify, explore and resolve local issues together. The inclusive approach connected me with the key stakeholders, providing broad representation, which was important in establishing and maintaining the relevance and legitimacy of the study (Coghlan and Brannick, 2014). The research makes no claims to be value free. A historical professional relationship existed with the MCCC team, and collaboration required a humanistic and socially interactive style. The design created forums (focus groups, classroom observations and working groups) for sharing ideas and resolving problems in a socially democratic manner (see Mertens, 2007). This approach is congruent with the ethos of action research for participant involvement in the analysis of evidence, planning and ongoing evaluation of impact of interventions (McNiff, 2013). The participatory approach satisfied a desire to listen to and respect my peers, balanced alongside my instinct for control, a personal characteristic that would not consider this research successful unless it delivered significant improvements in practice.

Ontological and Epistemological Perspective

To paraphrase Scott and Usher (2011), what is it then that I silently think? The selection of action research as the method to discover new truths, informing improvements in the quality of education reflects a desire for shared personal and professional growth. Baumfield et al. (2013:16) outline that our decisions, whether in the literature you choose, or the questions you pose and how you seek to answer them, is a reflection of your inner beliefs, how you view the world. The chosen methodology represents an affinity with the epistemological assumption that the purpose of academic research and discourse is not just to describe, understand and explain the world, but also to change it (Reason and Torbert, 2001; Mertens, 2007). This is a position that is congruent with the historical root of action research, believing that research producing nothing but presentations or articles would not suffice (see Lewin,

1948:35). Action research is about research helping us to learn how to do things better, resulting in changes within practice.

In action research, the researcher is not the expert and all views are of equal importance (Meyer, 2006), which offers the comfort of collective responsibility during decision making. At the same time, the democratic aspect generated apprehension, given the immediacy of the problems and the need for rapid improvement. In a democracy, things change when people want them to change, with my role becoming one of presenting evidence to a steering group for them to consider and decide upon, working together as team. I was the principal researcher, who designed and led the research study, overseeing its performance and maintaining an absolute focus on achieving the research objectives. The MCCC faculty were co-researchers, both as participants and in analysing the data from each research cycle, deciding its significance and agreeing the required actions. This may have been my research study, but it was very much a collective approach to improving *our* critical care programme. This is congruent with the democratic spirit of participatory action research (Somekh, 2011), and in reality, the educators and leaders at the MCCC only changed when they believed in the credibility[5] of the research evidence and were ready to change.

My nursing and academic experience is reflected in the adoption of a mixed methods approach, seeking to capture the complex human phenomenon involved within teaching, learning and assessment (see Mertens, 2007), along with a desire for a balanced perspective (see Teddlie and Tashakkori, 2010). A positivist approach was applied to deliver

[5] Credibility refers to the truth of data and the interpretation and representation of them by the research (Polit and Beck, 2012).

objective measurable data of student performance over the two years of the study. The use of questionnaires provided the opportunity for all students to contribute, and delivered quantifiable data that was rapidly analysed and shared. This type of evidence appealed to my pragmatism, a desire for quick measurable data to questions relating to whether our interventions were meeting expectations and improving student performance.

This is a post-positivist approach, which diverges from the binary interpretivist view of action research described by Kemmis et al. (2014). It reflects a pragmatic philosophy, comfortable with 'a milder form of positivism' (see Willis, 2007), grounded in critical thinking, and like Reason and Bradbury (2013), driven by the pragmatic need to resolve local practical problems. This pragmatism included using whichever research methods met the aim of the study, rather an allegiance to any system of philosophy (Creswell, 2015). The research stance adopted the positivist principles of validity, but allowed interaction with participants, including focus groups and participant observation. This was congruent with my role as a protagonist, recognising my actions and views would influence others, and equally that I was listening to and was influenced by their views. Further, as a nurse and educationalist, the interaction with participants satisfied a desire to listen and learn; a personal stance that was comfortable with the principles and process of action research.

What is Action Research?

Action research is a process whereby new knowledge of a situation is generated leading to change within practice (Williamson, 2012:2). Action research is not new, being first used by Lewin in 1946 when working with employees and their managers to investigate issues and find practical solutions to local issues (McNiff, 2013; Gray, 2014). Lewin recognised the gradual social nature of change, especially within established cultures (such as the MCCC).

He identified the value action research has in helping communities work together, to gain better understanding of complex issues, creating ownership of problems, which he recognised frequently led to the agreement of realistic solutions.

Action research has developed into 'a family of research methodologies which pursue action and research outcomes at the same time' (McAteer, 2013:47). It retains the imprint of social science and interpretivism as a democratic form of inquiry, undertaken with interested participants to better understand their practice and to work together to achieve improvements (Kemmis et al., 2014:5). There is evidence of a gradual paradigmatic shift that recognises the pragmatic value of combining quantitative and qualitative methods to achieve research objectives (Williamson, 2012; Katsarou, 2016). This post-positivist pragmatism provided the basis for a systematic, problem-solving inquiry, with myself and the MCCC working together as equals to identify and resolve issues of collective interest (Meyer, 2006).

Action Research within Healthcare Education

Action research has a long tradition in education and healthcare provision within the UK and USA (Williamson, 2012; Parahoo, 2013). It has been used to inform the evaluation and development of curriculums (Elliot, 1991; Morton-Cooper, 2000; Scott and Usher, 2011), leading to innovations in teaching and assessment within higher education (Swann and Ecclestone, 1999; Walker and Loots, 2016; Gibbs et al., 2017). It is recognised for its ability to critically examine local educational practice, providing a method of checking whether it is as we would like it to be and is functioning as it should (McNiff, 2013:15).

Action research was suitable within this setting because it provided a means of applying and evaluating educational theory within the real world of teaching (McNiff, 2013); a feature evident throughout the duration of this study. The research process was as much about answering the questions we had as educationalists, learning together and moving forward as a team, as it was about the answers themselves. However, as Stringer (2013) notes, in action research there is no guarantee of success because it typically involves social and political dimensions, and people may choose to disengage, or ignore the findings. It is recognised that there was a substantial risk that particularly as a novice researcher, the action research would not achieve significant improvements in the quality of the programme. This risk acknowledged action research is a creative and exciting interventionist approach that encouraged experimentation. The action research began by asking a group of people to examine problems, and then used the research process to find ways of collectively understanding, and resolving them (Morton-Cooper, 2000; Brown et al., 2014; McNiff, 2013). This classical description defines the research here well; a group working together to create localised learning that was relevant and effective in improving education for our students.

The Value of Action Research to the Local Practice

Action research remains a pragmatic research method that enables communities to learn together how best to improve local practice, rather than seeking to produce generalisable knowledge (Scott and Usher, 2011; Williamson, 2012; Kemmis et al., 2014). Localised learning is what this action research study was all about (Whitehead, 2002:72). It encouraged the key stakeholders to engage in critical reflection, creating the opportunity to listen, learn and then to introduce interventions to improve local educational practice.

This research involved the faculty learning together how we could best support students to achieve their academic and clinical potential. A cyclical action research model performed over two years helped us to identify and gain understanding of the key issues. The model provided a systematic process for changing teaching practice, repeatedly re-evaluating if there was evidence that the changes were improving the quality of the education, such as whether students were more satisfied with their learning experience and were performing better. The action research process frequently required us to pause, take stock and draw on educational theory to develop potential answers to inform potential interventions (Winter, 1998; Biggs, 2003; Davis, 2007). Action research provided the opportunity to better understand the influence we have as educators upon student learning and performance.

Adopting a Simple Action Research Model

A simple action research model was required to guide the process. Lewin (1946) used a basic problem-solving model of cyclical activities, which starts with the identification of a general idea, diagnosing the problems, implementing actions, followed by evaluation and revision of the general plan (Elliot, 1991:69):

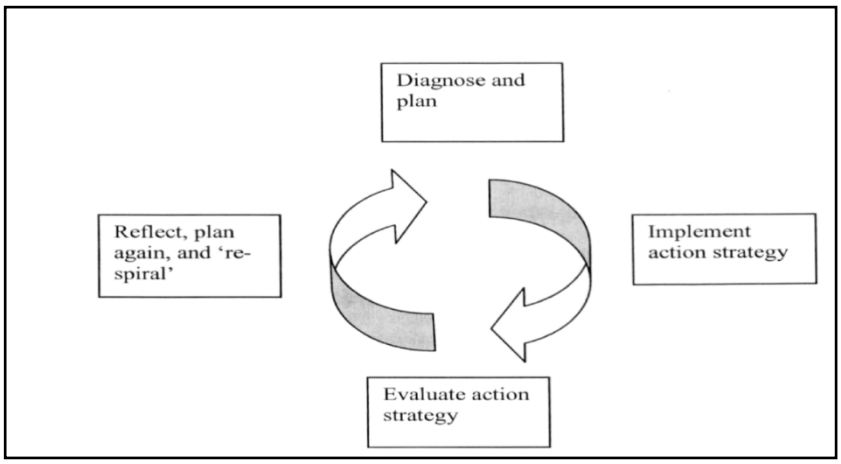

Figure 5. Action research spiral (adapted from Lewin, 1946)

The spiral developed by Kemmis and McTaggart (1988) follows a similar problem-solving approach of planning, action, observation and reflection. The spiral illustrates the continuous and self-reflective nature of educational action research, allowing movement from one cycle to another in a critical process of refinement and learning.

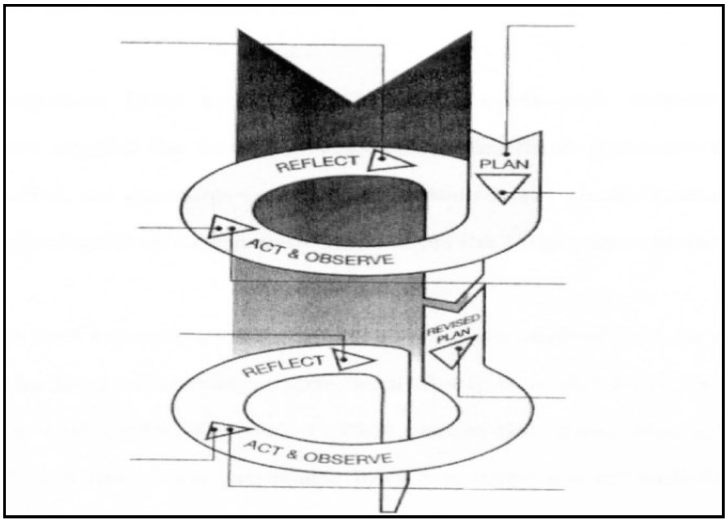

Figure 6. Cyclic action research process by Kemmis and McTaggart (1988)

There are many action research models depicting roughly the same cyclical problem-solving process. However, Gray's model captures the circular and ongoing nature, with each of the steps continually monitored in order that adjustments can be made as needed (Gray, 2014). This action research model was chosen for this study because it visually illustrates the cyclical problem solving and reflective process.

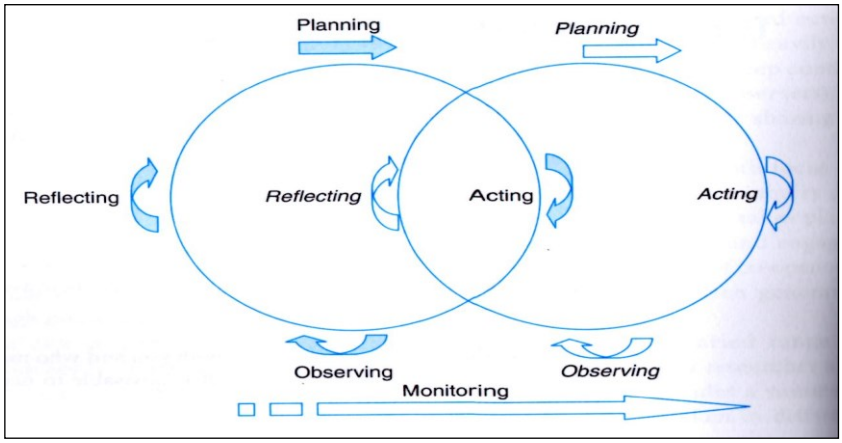

Figure 7. Action Research Model: Gray (2014)

Gray's cyclical depiction is familiar to nurses given its resemblance the 'nursing process' model of assessment, planning implementation and evaluation of care (Craven and Hirnle, 2003). These illustrations were shared with the nurses at the MCCC to create a shared understanding of the action research process.

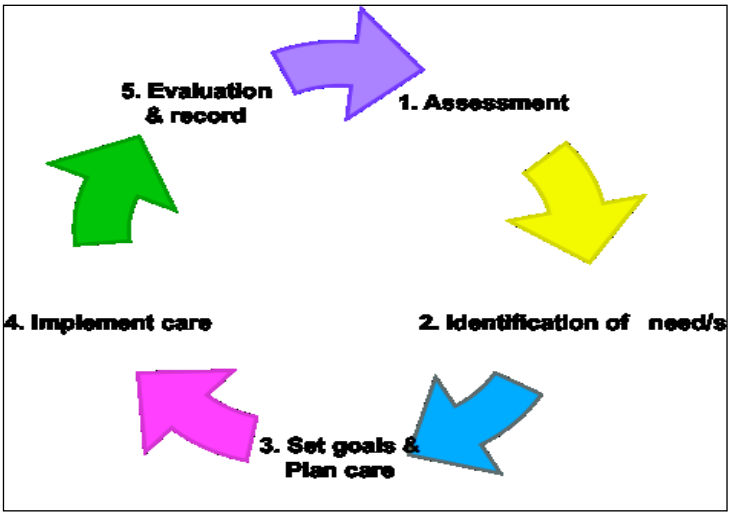

Figure 8. The Nursing Process (adapted from Craven & Hirnle, 2003)

The study retained greater cyclical definition than described by McNiff (2013), but shared a similar turbulent experience, with solutions often difficult to agree or the effectiveness of some interventions difficult to evaluate. Yet, this research brought an educational community together, in fostering ownership of the problems and empowering experienced educators and students to become part of the solution. In line with the findings of Morton-Cooper (2000), awareness of the importance of a shared journey was vital in maintaining enthusiasm and successful outcomes over the two years of this study.

Participatory Action Research

A strength of action research is its ability to traverse education and healthcare; allowing me to work with teachers to enable them to be involved in research that is relevant to them as practitioners. Participatory action research (PAR), as the name suggests, typically involves participation by a community to transform some aspects of its situation or structures (Coghlan and Brannick, 2014). PAR shares the methodology's collectivist and socially democratic tradition, but with an emphasis on participants being involved in and contributing to the research, learning together at their own rate and through their own experiences (Kemmis et al., 2014). This was important because teachers are social beings, professionals with their own views and established practices. They would only permanently change their practice to deliver lasting cultural and organisational change if they learnt better ways of doing things.

This utopian view of a collective enquiry and action, a team united in its desire to move forward does not reflect the realities of the underlying political and cultural tensions present within the MCCC. Elliot (1991) warned of such tensions between the academic researchers and teachers because they often have different notions of the purpose of education. Karim

(2001) described this as a clash of cultures, with practice resenting what it perceived as subservience to the inflexible covenants of academic regulations and a scholarly culture. This description has resonance with the relationship with the MCCC and supports the use of a participatory approach. This collective approach acknowledges that over two years, some of the objectives were modified as we listened and learnt together (Whitehead, 2002:85).

A potential threat to a continued participatory approach was the tension that could develop between teachers and researchers, particularly given the use of classroom observations (Elliot, 1991). These aimed to critique content and teaching strategy, rather than individual teacher performance. This was essential if the research was to be viewed as positive rather than a threatening critique, which would have created tension and barriers (Elliot, 1991:54; McNiff, 2013).

Change and Leadership

Action research is fundamentally about change according to Coghlan and Brannick (2014), and therefore the action researcher requires knowledge and skill in achieving organisational and social change. Changing the educational culture at the MCCC involved teachers changing their behaviour, a process that Kotter (1996) warned would be time consuming and turbulent. This process created political and social tensions, which Morton-Cooper (2001) reassuringly warned are a frequent part of action research in practice.

Kotter (1996:26) argues that achieving such transformational change will be 70–90% dependent on the charismatic abilities of a leader to inspire people to feel they are positively involved, acting as empowered professionals, rather than expecting them to submit to

management power. In reality, charisma is perhaps uncommon, as well as hard to define and was replaced by the less glamorous qualities of enthusiasm, tenacity and resilience. A steering group or 'guiding coalition' was required to lead this process (Kotter, 1996). This role was performed by the Programme Committee, which met on a bi-annual basis and included managerial, PBE, academic, practice and student representation. A separate working group was formed, which included all the PBE and myself and met monthly. These groups provided a critical community, a critical stance (see Kemmis et al., 2014) to review the data, agree and prioritise plans, and instigate interventions, which they evaluated and reflected upon.

The groups agreed and formulated clear, written records of changes, including realistic timescales, which were short enough to provide momentum, and yet robust enough to deal with planned structural and emergent changes. The initial questions relating to areas such as our students' motivations, their learning expectations, and the purpose of the CCP were generated in discussion with the Programme Committee. This collaborative process for the formulation and validation of the questions continued throughout the study, with the proviso that questions must address the stated aims and objectives of the study. This control was required to retain the focus of the research and ensure it was not deflected by other members areas of interest, such as the validity assessment of competence within practice. Questions were discontinued once we had resolved issues such as student awareness of the national standards critical care nurse education. New questions were added as new issues arose, such as determining the period of pre-course critical care experience; the value of the pre-course writing skills assessment; and evaluating the level and impact of student engagement with formative assignments. The validity of the questions in generating data that was useful in answering the research objectives was evaluated by examining the

participant responses, and sharing this with programme committee after each action research cycle. This reflects action research as a continuous evolutionary phenomenon (Weick and Quinn, 1999). The consistency with which the data generated by these questions informed learning and led to improvements in educational provision, indicate the quality and validity of these questions.

Tichy and Devanna (1990) correctly warned that ingraining the new ideas and practices arising from this research within a curriculum would take time and require constant reinforcement to embed them into the cultural reality of everyday practice. Goleman (1999) identified that emotional intelligence and people skills were key leadership skills, and maintaining relationships where disagreement was present was a constant feature and challenge, particularly given the longitudinal nature of the study. Martin (2003) recognises the importance of maintaining these relationships because people will only permanently change their behaviour and wholly commit to a vision when they agree with it. The relationship with students and educators was based upon mutual respect and trust.

The contributions of students were central to this study, recognising the importance of providing them with 'the opportunity to contribute to the shaping of their learning experience' (QAA, 2012a:4). All voices should be heard (Stringer, 2013), and a failure to involve them in this process would have deprived the steering group of their insights and support. Baumfield et al. (2013) argue that student feedback is an essential part of any educational review. This study created a new partnership, looking through their eyes to find what really works and what does not, and their views were central when evaluating the impact of change within the classroom (see Arhar and Buck, 2000). This team approach helped us to stay grounded in practice and maintain the support and interest of students, allowing us to work together in

developing a curriculum that recognises and supports the achievement of their learning goals. The absence of their voice would have deprived us of the means of assessing the validity of our assumptions and of authenticity created by their contributions as they evaluated their learning experience and contributed to the reconstruction of their education programme.

Criticisms of Action Research

Kemmis et al. (2014) warned that action research in education has been used to deliver prescribed change, rather than staying true to the empowering values of participatory action research. Kemmis is critical of 'facilitated' oppressive projects that represent self-interests and undermine the collectivist process by excluding participants' involvement from decision making. In contrast, Clark (2001) is highly critical of the emancipatory and democratic claims of action research, arguing that it results in teachers deciding their likes and dislikes, resulting in an ineffective model for change. Whilst recognising the legitimacy of these risks, this study sought genuine social collaboration, based upon the development of a collective understanding to move forward as a team (Stringer, 2013; Bryman and Bell, 2015). It represents the collective determination of a team to appraise current practice and learn how to improve the quality of local educational provision.

The repeated cycles of action research are recognised as gathering large volumes of data, which require recording and analysing before changes to practice can be agreed (Coghlan and Brannick, 2014). These changes required significant time and resources to action and evaluate (even within a two-year timeframe), representing a substantial investment and trust in a research method that is recognised as having potential to not deliver the desired outcomes (Gray, 2014).

Action research has also been criticised because it uses qualitative research methods, to generate data of only local value (Bryman and Bell, 2015), but this fails to recognise the foremost objective was the pragmatic need for local change, rather than theory generation (Elliot, 2009). The complete detachment demanded by objective science was not possible or desired given the nature of the existing collaboration, and the need to engage in discussions with participants to gain insight and understanding of complex practice situations. Participatory action research examines the subject holistically and is legitimised as a science based upon different philosophical underpinnings compared to the positivist approach (Meyer, 2006; Bellman, 2003), such as the authenticity of the evidence (McTaggart, 1997; Winter, 2002; Stringer, 2013; Coghlan and Brannick, 2014).

Research Design

To be valid, a research design must fulfil the aims of the research study and be consistent with the chosen research methodology. This action research design draws upon mixed methods to illuminate professional practice, testing the validity of our hypothesis, whilst generating new questions to help us to develop the quality of education. It is set within the very real context of delivering of critical care education, valuing collaboration with research participants in all aspects of the research process. This 'real participation' was important in validating accuracy in terms of the data's confirmability and authenticity[6], creating shared ownership of the dialogue, analysis and findings (McTaggart, 1997) to produce 'real world' data with the credibility to inform future practice.

[6] Authenticity: the extent to which participants' feelings and emotions are presented in a faithful manner (Polit and Beck, 2012)

The design provided a systematic process of undertaking data-driven enquiry within the context of education (Baumfield et al., 2013). It represents a pragmatic stance strongly linked to action research (see Greenwood and Levin, 1998; Katsarou, 2016), with the methods selected based upon their usefulness, workability and practicality in answering the research questions (Reason, 2003; Teddlie and Tashakkori, 2010). The combination of focus groups, questionnaires and classroom observations were used to gain both an insider view (Ong, 1993) and overview of the curriculum. These mixed methods facilitated the high levels of participation necessary to create an inclusive social process, concerned with achieving collective understanding and lasting improvements (Gadamer, 2004; Baumfield et al., 2013; McNiff, 2013).

The use of quantitative and qualitative data collection methods, within a convergent design that merged results during analysis and interpretation (see below), provided the combined strength of both data sets (see Creswell, 2015).

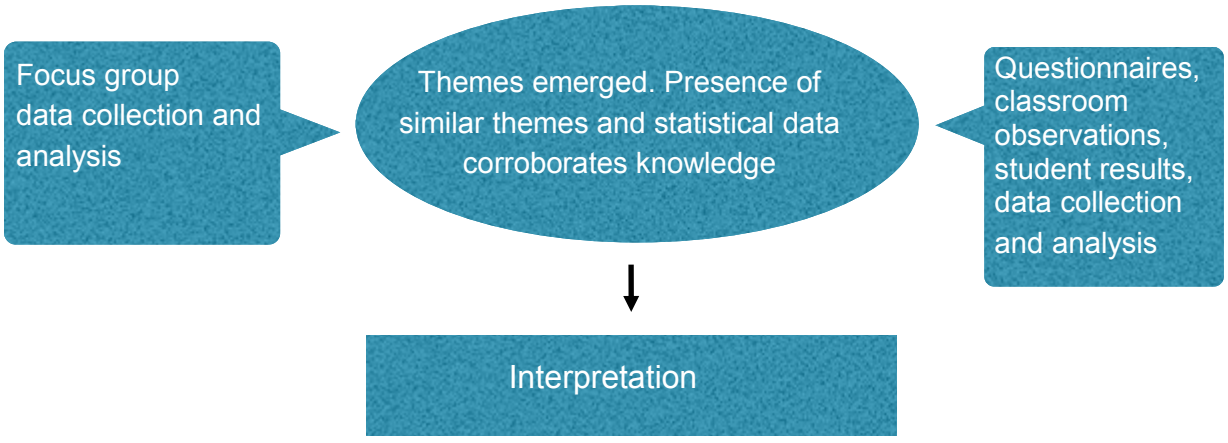

Figure 9. Convergence design adapted from Creswell (2015)

The convergence of data allowed analysis of research questions from multiple perspectives (see Green and Caracelli, 2003; Mertens, 2007; Bowling, 2014), creating a deeper, more rounded level of insight and certainty than could have been achieved from a single method (Barbour and Kitzinger, 1999; Puchta and Potter, 2004; Giddings, 2006; Creswell, 2015).

Focus groups provided qualitative data, with personal interaction and exploration of the key issues with all the educators, intensive care nurse managers and approximately 20% of the students. The remaining students were involved in the research using quantitative questionnaires incorporating the same questions. This design provided all students with a voice in helping to shape their learning, and that of future learners, which is true to the participatory nature of action research. The convergence of data strengthened its validity (Dillman, 2007; Guion et al., 2011; Creswell, 2015), with added 'certainty' being derived from multiple forms of evidence producing consistent themes (Giddings, 2006).

This helped to develop confidence in the quality of the research data amongst the staff at the MCCC, which was essential in maintaining belief and support for the study. The greater level of certainty this brought was significant, because the use of action research to change practice within a curriculum in such a large and long-established programme brings a high level of responsibility for me to ensure that the data is accurate and findings valid. The complexity of these issues supports the adoption of mixed methods to reveal different truths, pertaining to clinical practice and professional education, and in providing opportunities to analyse evidence from different standpoints. This plurality is useful within action research because it provides multiple opportunities and perspectives from which to observe and engage with participants during periods of change (Coghlan and Brannick, 2014).

Good research is purposeful, with clearly defined goals, sound methodological procedures and transparent systematic analysis of the evidence (Coghlan and Brannick, 2014). A problem-solving model for action was developed to provide a framework that would inform the development of an action plan by the steering group. This utilised McNiff's (2013:71) basic action research process presented below:

- We review our current practice
- Identify any aspect/s we want to improve
- Imagine a way forward
- Try it out, and
- Take stock of what happens
- Modify our plan in the light of what we have found and continue with the 'action',
- Evaluate the modified action,
- And so on, until we are satisfied with that aspect of our work.

This process involved collective critical reflection by the steering group to examine and evaluate educational practice, which is an integral part of action research (McAteer, 2013; Reason and Bradbury, 2013). This evaluation is recognised as the most critical stage and the most difficult to successfully complete (Brown et al., 2014) because it involves analysing complex data from multiple sources (focus groups, questionnaires, classroom observations) alongside student performance indicators, and interpreting this to make rational, well informed decisions.

The coded data and findings were reviewed by the different professional groups at the MCCC. The presentation of this data enabled participants who had been involved in the classroom observations, focus groups and the distribution of questionnaires, to confirm its

authenticity. The Programme Committee performed the role of steering group and had overall responsibility for making strategic changes. It included academics, PBEs, managers, clinicians and student representation. A curriculum working group, which included all the educators and academics, met monthly to action change and make further operational decisions. The minutes of these meetings reflect the working triangulation of this process as academics, clinicians, students and managers collaborated to improve the programme. These monthly meetings fostered fluidity, spontaneity, creativity and inclusive participation, rather than being constrained by the adoption of a formal six-monthly research feedback-evaluation cycle (Coghlan and Brannick, 2014).

The minutes of the curriculum working group and the Programme Committee, with its Continuous Improvement Plan provide a transparent record of the action research process. Gray (2014) argues such documentation is useful in confirming the accuracy of the events and the rigour of the enquiry, which supports its validity (Reason and Bradbury, 2013). It provided records of the discourse, homogeneity and changing dynamics within the groups, as the action research process developed. These reinforce the view that the value of action research is not simply measured in terms of whether the change was successful. It is also about the exploration of data, examining its contribution to learning and new knowledge, as well as how change was managed (Coghlan and Brannick, 2014).

Validity in Action Research

Validity is described by Bryman and Bell (2015) as the most important criterion of research**.** This is because it concerns the integrity of the results and conclusions, addressing whether the instruments have measured what they were supposed to measure to produce valid findings. Action research is part of a qualitative tradition, in which assurance of validity is not

always deemed necessary or feasible (Kemmis et al., 2014). Stringer (2013) argues that in action research issues of validity, reliability, objectivity and generalisability should not be used to judge quality because it is a form of social enquiry that requires me to become personally engaged with practice to gain insight into and understanding of local complex social situations.

The objective was to provide a platform for democratic inquiry to generate 'local knowledge' that led to change within practice (Anderson and Herr, 2014:xiii) and to create a fair reflection of these events for others to judge. To this end, the data was shared with the steering group, teachers and student representatives for them to confirm it as accurate and to consider after each action research cycle. This confirmability[7] is identified by Morton-Cooper (2000:85) as the most important criterion for judging action research because it provides the scrutiny required to assure a key measure of validity: the trustworthiness of results (Whitehead and McNiff, 2006). This was important in assuring colleagues that the shared data truthfully reflected the views of participants and the reality of classroom practice, described in terms of its authenticity (Winter, 2002). In line with the views of Anderson and Herr (2014:69), positivist perceptions of validity and 'trustworthiness' were important issues during this action research.

Anderson and Herr (2014:69) identify five validity criteria linked to action research, which are now addressed. *Democratic and catalytic validity* were achieved by the inclusive approach of involving all the stakeholders in data collection, listening to and learning from

[7] Confirmability is the ability to demonstrate that data represents the participants' responses, not the researcher's biases or viewpoints (Polit and Beck, 2012)

each other. This contributed towards a collective knowing; a shared understanding of current provision, which enabled us to transform it. *Process validity* was addressed by the sharing of data using action research cycle summary sheets with the PBEs, lead nurses and student representatives during the monthly Curriculum Working group meeting and at Programme Committee. This allowed data to be verified, with issues considered in a manner that permitted collective ongoing input and learning. The dependability of the research is illustrated through the minutes of these meetings, providing a record of the decision trail of each group as they concurred or questioned results and agreed on the findings / significance of the data. The degree to which *Outcome validity* was achieved will be determined by the extent to which the problems that warranted this research were resolved. *Dialogic validity* refers to the achievement of new knowledge, such as the eventual development of a new CCP and the adoption of more varied teaching strategies.

The presentation of participant excerpts in the results section and the inclusion of sample transcriptions from student and PBE focus groups provide a record of the collective voices, enabling others to scrutinise them. The selection of appendices is based upon a desire to demonstrate the robustness of the processes in framing problems, planning action and then resolving the issues. This level of transparency is required to facilitate trustworthiness, including sufficient rigour and openness to provide credibility in the data's authenticity (Guba and Lincoln, 1989).

Generalisability

Generalisations from action research are often difficult to make beyond the specific context, meaning transferability and usefulness of the findings beyond the CCP can be questioned (see Williamson, 2012; Baumfield et al., 2013). However, the scale of this study and its

involvement of a large number of participants within a large critical care programme had implications for critical nurse care education in general and post graduate clinical education. This was a single site study, generating local results that did not advise other critical care education providers on what to do or not to do, but the findings were of interest and influenced the development of the revised National Adult Critical Care Nurse Education Standards (CC3N, 2016) (see Chapter 7).

Addressing the Issue of Bias

As the principal researcher and co-developer of the CCP, there was a sense of paternalism for the programme. A critical stance was adopted to overcome criticism of bias, with statistics and other data shared in consistent, clear and transparent formats. The temptation may have existed to manipulate statistics. The qualitative results helped to offset this risk by providing a richness and understanding of participant views, which provided assurance in the integrity of the process because the views expressed were consistent with the statistics, increasing the validity of the study (Baumfield et al., 2013; Gray, 2014).

While I acknowledge this potential bias as an insider researcher, I am also a professional, representing my university and I maintained a position of 'critical subjectivity' throughout the research process (Anderson and Kerr, 2014; Scott and Usher, 2011; Kemmis et al., 2014). The research involved a large degree of social interaction using focus groups to gain a qualitative perspective, which provided participants with a voice that produced fresh insights. A subjective element brought a level of introspection, allowing us to explore our existing premises and prejudices, which was useful because, as Scott and Usher (2011:29) argue, 'we cannot help but be subjective'.

Data Collection Methods

This section presents the data collection methods and tools that were used in this study.

Methods

1. Classroom observations of all study days.
2. Focus group interviews with all PBEs, MCCC managers, lead nurses representing clinical practice and 20% of the students.
3. Questionnaires: 80% of students' pre- and post-course.

Other sources of data:

- Quality indicators of student academic performance including assignment pass rates, attrition and completion rates derived from the unit reports.
- Continuous Improvement Plan and external examiner feedback.
- Personal diary log.

Classroom Observations

Well planned curriculum research and development is based on the study of classrooms (Hopkins, 2008:40). This research is strongly linked to curriculum evaluation, change and the development of new teaching strategies. The use of systematic classroom observation provided a snapshot of practice and a framework for constructive feedback to tutors, which has been shown to improve teaching (Waxman et al., 2004). During the first year of the study, the 12 study days that comprise the CCP were observed with written and verbal feedback provided to tutors after each session. In the second year, this process was repeated and used to assess improvements.

Aims of the classroom observations

- Investigate current teaching practice to inform curriculum development as part of the transition towards a graduate (and master's) level programme.
- Examine whether teaching pedagogies were aligned to meet the needs of graduate and post graduate level critical care nursing students.
- Record the extent to which the content of the study days were aligned to supporting students achieve their practice and academic learning needs.
- To develop an increased understanding and shared insight with the MCCC staff of the influence teaching content and methods had upon the student learning experience.

The use of classroom observations as a research method

Classroom observations are commonly used in educational research, either on their own or, as in this case, in combination with another method of data collection. The research method provided a means to systematically observe educators, students, the interactions and the materials used, providing live data, rather than relying on second hand accounts or presumptions (Cohen et al., 2011: 456). Direct observation yielded more valid authentic data than possible with inferential methods because what people say they do during teaching and what they actually do, may differ considerably. Observation ran for the whole day, from 08.00 until 3.30 pm.

Scott and Usher (2011) describe a typology of approaches ranging from a detached observer, recording data using a structured criterion referenced approach, to a semi or fully immersive approach, where the person conducting the research is participative in the teaching, and the records may be freehand. The challenge was to select a valid

observational approach that would deliver a clear and reliable picture of what was happening within the classroom, gathering concise information related to key issues of curriculum alignment and teaching methodology, rather than a general appraisal of the quality of teaching. To be valid, the classroom observations needed to achieve the objectives outlined above, and to be reliable they needed to return consistent data sets related to these issues (Scott and Usher, 2011). Hopkins (2008:75) warned that while observations are generally productive, if they are not implemented well, they can be disastrous for staff morale, which could have alienated PBEs, creating resistance. An inclusive approach involved the educators in all stages of the research, empowering them with knowledge of the issues and outcomes, which helped to reduce a natural apprehension to being observed. The approach was useful in facilitating classroom access and allowing me to gain greater understanding of what was happening, by facilitating more sociable interaction with tutors and students (Scott and Usher, 2011).

This relationship with the teachers helped to reduce, but did not remove, the feeling from tutors that they are being assessed; which may have resulted in a change in their behaviour such as inhibiting or boosting their performance. Interaction during the classroom teaching by the research team could alter the classroom dynamics, creating an unrepresentative view (Scott and Usher, 2011). To avoid changing or disturbing what was being studied, I consciously adopted the role of complete observer, a ‘fly on the wall’, providing a more detached and objective account (Scott and Usher, 2011). In reality, observation was not totally objective (Pine, 2009:192), as the mere presence within a small classroom of an observer results in some level of interaction, affecting the observed and the observer. This recognises that some social interaction is permissible within this environment, to minimise tensions and replicate a more natural environment. This was important because while the

MCCC provided permission to conduct the observations, for the observations to be useful and be repeatable over a period of two years, we needed the commitment of the PBEs and students who were being observed. This approach was congruent with the ethos of action research, in the sense that it was conducted with rather than on people (Reason and Bradbury, 2013). The observations were necessary to provide a window into the classroom, which was transformative in terms of the new insights it provided. The feedback and discussions that arose from these observations created the opportunity for individual and collective reflection by the educator group; interactions that Reason and Bradbury (2013) argue are critical within participatory action research.

Two academics performed the classroom observations on a random basis as recommended by Guion et al. (2011). The consistency of the findings and themes, regardless of the observer, fostered confidence in the robustness of the process and results.

Politics of classroom observations

Performing research within an organisation is political, especially as an observer examining the current practice of professionals who were colleagues (see Coghlan and Brannick, 2014). Political tension emerged, with some PBEs questioning what would happen if they did not agree with the observations. This was a normal response to organisational action research, which involves subjecting the current behaviours and norms to scrutiny, and diagnosis is not a neutral act. For the PBEs, the classroom observations were always going to be the most threatening part of the research, as it was likely to lead to questions regarding current practice and change. It was key that the academics undertaking this observatory role were self-aware, and used their 'people skills' to negotiate access, recognising that they were potentially invading another tutor’s personal space (see Hopkins, 2008). This involves

recognition that such observations were likely to be viewed as assessments, and as humans we can feel vulnerable at these times; particularly if this may involve negative feedback. A positive supportive approach was adopted, seeking to make the tutors feel they were part of a partnership, working together in a friendly professional and productive manner. The overwhelmingly positive comments by the educators at the end of study demonstrate this was largely achieved.

My role may have been seen initially by some as a saboteur of the organisations' current values and beliefs. A focus on the generation of valid and useful data allowed the group to move beyond this to and make collective informed decisions. The management of these tensions highlighted the change management skills that were an essential aspect of delivering the change component of participatory action research, using people skills to listen, negotiate, persuade and importantly, be patient.Pettigrew (2003) reflects that it can be exhilarating when your enthusiasm, advocacy and energy achieve success and equally despairing when things go wrong, such as several of the PBEs initially withholding their consent to participating in classroom observations. As Pettigrew (2003) notes, there is a fine line between acting in a politically astute manner and acting unethically. He argues that acting as a change agent cannot always be done with openness, honesty and transparency. The PBEs had a right to withhold their consent to the data gathered being used in the study. They did not have the right to prevent classroom observations being performed by MMU as part of the normal quality assurance processes.

The development of the classroom observation tool

The purpose of the classroom observation needs to be clear, and focused towards achieving the objectives of the study. Hopkins (2008) warned that an open focus, using blank sheets

is likely to produce a subjective mass of data, which will not address the needs of the study. Hopkins (2008) recommended structured systematic observations to maintain focus, reduce subjectivity and improve consistency in the range of data recorded, which is congruent with this study.

A simple tally system that recorded which themes were addressed or interactions occurred in terms of the quantity rather than the quality was rejected as too superficial. For instance, relating theory to practice and the assignment may only occur once or twice in one study day but it may last for 20 minutes and be very effective, whilst in another session it may be mentioned many times but lack sufficient depth to be a meaningful learning experience. To address this concern, space for observer comments was provided. This section was used to document perceptions and provide some context of the overall classroom learning experience. The subjectivity and richness of these comments was useful in capturing a picture of life in the classroom (Pine, 2009:193).

Acute care unit (L6)

1. Identify a patient from your clinical practice and provide a brief holistic introduction.
2. Demonstrate critical understanding of the patient's acute illness, relating this to the patient's presenting signs and symptoms.
3. Critically analyse your role in meeting this patients' needs including a critical evaluation of the evidence base underpinning your practice and decision making. Consider communication with patients, and their significant others.
4. Use critical reflection to evaluate care delivery and inform future practice.
5. Style and referencing (using Harvard).

Critical care unit presentation (L6)

1. Identify a patient from your clinical practice and provide a brief holistic introduction.
2. Demonstrate critical understanding of the patient's acute illness, relating this to the patient's presenting signs and symptoms.
3. Critically analyse your role in meeting ONE of this patient's needs, including a critical evaluation of the evidence base underpinning your practice.
4. Demonstrate evidence of learning and development for future practice. This will include an educational resource.
5. Presentation skills.

The criteria for what was to be observed and recorded was agreed with the MCCC, based upon the CCP learning aims and outcomes, and the assignment marking criteria for the Acute and Critical care units (see above). The classroom observation tool was designed to capture how well classroom activity was meeting the aims of the curriculum, specifically focusing upon the following key areas:

- *Pathophysiology related to patient signs and symptoms:* understanding this in critical illness underpins decision making.
- *Role of the nurse:* the educators were keen to ensure this was not lost within the technical aspects of critical care / working within a multidisciplinary team.
- *Evidenced base:* a marker of quality for educational materials. There was a concern that a weak evidence base and unreferenced materials were impeding the quality of student academic and clinical progression.
- *Critical analysis, reflection and clinical decision making.* This was important in the development of students' applied higher order thinking skills.

The agreement on these criteria created agreement of what we needed to observe, to evaluate the how well the study day provision was aligned to the aims of the curriculum. The discussions also resulted in the realisation that no one had observed all the study days; rather, each was taught and judged in isolation. The observations were an opportunity to provide an overview of the programme, adding value as a form of professional development for the educators and quality assurance for the programme.

The classroom observation record (figure 10) was adapted from the SIOP classroom observation model developed by Echevarria and Short (2000) (cited in Waxman et al., 2004:44) to provide a standardised framework. The scoring system measured the extent of alignment in each of the criterion, ranging from highly evident, evident, partially evident to not evident. There was also a ‘not applicable’ option, which was needed for teaching such as simulated practical teaching where referencing would not be present.

To observe accurately, the study days required concentration and a tool capable of capturing themes reduced concerns relating to loss of concentration. A criterion referenced record sheet was developed to help prevent observer drift when the instrument was used by different members of the research team (Scott and Usher, 2011). Cohen et al. (2011:459) noted that classroom observation is not only time-consuming but is prone to 'selective attention' bias in terms of what, why and when the observer is observing. To address this, the two academics jointly observed the initial study day on each unit to establish and maintain a consistent approach to data collection and observer feedback. This process involved written and verbal feedback, exploring the day with the educators, followed by a two-way discussion of any suggested improvements, before writing an agreed brief. The classroom observation tool template (figure 10) is presented below and examples of completed classroom observations are included as appendix items.

CLASSROOM OBSERVATION RECORD

Observer 1:	Observer 2:	
Title of Study Day:	Date:	Number of students:

Directions:
For each of the criteria listed below provide a score 0-3 that best reflects what you have observed. Please use the comments section to cite specific examples of the behaviours observed.

	Highly evident 3	Evident 2	Partially evident 1	Not evident 0	N/A (not applicable to this session)
Learners are actively engaged in discussions					
Materials are underpinned using Harvard referencing					
Underlying pathophysiology is clearly related to the signs and symptoms with which patients may present					
Describes and critically discusses the treatment options (evidence-based)					
Facilitates critical discussion of the role of the nurse in holistically caring for patients					
Facilitates critical discussion of the role of the nurse in caring for relatives					
Facilitates critical discussion of the role of the other member of the MDT					
Uses reflection to evaluate care delivery & inform future practice					
Consideration of ongoing care needs					
Content is linked to the assignment					
			Total score:		

Comments & feedback:

Feedback provided to teacher/s: yes / no

Any comments from teacher/s

Observer's details. Print Name: Signature:

AFTER COMPLETION RETURN TO J.FINCH, PRINCIPAL RESEARCHER FOR CODING AND STORAGE

OCSI Classroom observation record. Adapted by J.Finch from Bakewell and Short, (2000) *The SIOP Model.* 05/09/2013

Figure 10. Classroom observation tool

The classroom observations formed one tool in assessing current provision, and in allowing us to make changes and then evaluate if there was any impact on the student learning experience and performance. This was measured by their classroom evaluations, academic performance and post-course feedback provided in questionnaires or focus groups. The use of focus groups and questionnaires provided a student voice, sharing their learning expectations and experience.

Focus Groups

Focus group interviews often form the mainstay of data collection in action research because they allow researchers to get inside the story (McAteer, 2013:73) using a recognised format for group discussions, to collectively explore a specific set of issues (Barbour and Kitzinger, 1999). A key feature distinguishing focus groups from group interviews or brainstorming is the active role as moderator in encouraging group interaction amongst the participants, whilst maintaining a 'tight focus' on the discussion (Kevern and Webb, 2001). The tightness of this focus was key as if it was too loose then agendas within the group could have resulted in the set topics not being discussed. However, if they were too restrictive, then relevant key concerns of the group may not have been explored.

Focus groups in health education

Focus groups originated in social and market research in the 1940s and 1950s, becoming established in social research during the 1980s (Morgan, 1996; Puchta and Potter, 2004). They were described as 'the focused interview' by the sociologists Merton et al. (1990), as a means of exploring a group's views, tendencies and preferences. They have become an established research technique in nursing research, being used to explore the views,

feelings and lived experiences of patients, relatives or practitioners (Mok et al., 2010; Holm and Severinsson, 2014). The strength of this research technique was its ability to get under the surface of issues; a key goal in health education research (Basch, 1987:414).

The method was useful in evaluating the CCP curriculum because there was a need to collate and learn by listening to multiple perspectives (Basch, 1987; Vaughn et al., 1996; Breen, 2006; Massey, 2011). Focus group discussions were appropriate because nurse educators and student nurses are highly skilled communicators, familiar with group discussions and expressing their views on sensitive issues in a mature and supportive manner (Kevern and Webb, 2001; Kvangarsnes et al., 2012). They were extremely useful when researching curriculum change during this longitudinal study because of their value in exploring user views on issues as they unfolded, recording a rich tapestry of the cultural, social and organisational change (Barbour and Kitzinger, 1999).

Focus groups provided large numbers of participants with the opportunity to express their views on keys issues that matter to them, such as their educational experience, thoughts on proposed changes or the quality of the CCP, in as much depth as they felt appropriate (Basch, 1987:414). Rather than asking questions of each person in turn, I encouraged group discussion, with participants talking to one another as they explored the topics in the detail that they wished to discuss them. The facilitation of group discussion provided participants with the opportunity to listen to others, change their minds and / or agree with views they would not have considered (Merton et al., 1990; Kitzinger, 1995; Morgan, 1996; Redmond and Curtis, 2009). Our attitudes and perceptions, beliefs or behaviours are developed in part by interaction with other people, and the use of focus groups provided a powerful forum for mutuality, pluralism and learning. In this way, they captured the language of professionals

as they explored issues, and provided an indication of the degree of varying consensus on various topics, which demonstrated their recognised strength when evaluating cultural change (Krueger, 1994; Barbour and Kitzinger, 1999). It is for these reasons that this qualitative technique is regarded as highly valid when exploring social groups' views, given their ability to reveal truths (Savage, 2006).

Group size

There is consensus that focus group sizes range from 4–12, with Krueger (1994) citing 5–6, Barbour and Kitzinger (1999) 8–12 and others 6–12 (Basch, 1987; Saks and Allsop, 2007). All agree groups must be small enough for everyone to have the opportunity to share insights, whilst large enough to provide representative diversity. Group sizes of 4–6 were selected because this allowed sufficient time for the discussion of complex topics with expert practitioners (Morgan, 1997; Krueger and Casey, 2015).

Homogenous or heterogeneous sampling?

The importance of recording views that are representative of all the key stakeholders fostered an inclusive participatory approach. The sample needs to credibly represent each of the key stakeholder groups being studied (Saks and Allsop, 2007). To achieve this, we considered whether sampling should be heterogeneous or homogeneous.

Traditionally, market researchers' sample to achieve heterogeneity of participants, with the aim of achieving a range of views within each group (Saks and Allsop, 2007). Jayasekara (2012) recognises this approach can be useful in exploratory studies because of its ability to explore a wide range of views within a diverse group. In the context of marketing, this has

the advantage of adding greater generalisability to the wider population. The production of generalisable or transferrable data were not key objectives in this study, rather we were seeking to capitalise on the participants' shared experiences to inform local change (Kitzinger, 1995), which could be of value and interest to others. The homogenous nature of the participants, who shared the commonality of nursing within critical care, and in the case of the students, studying together was beneficial. This natural homogeneity was reflective of the population, providing representative insights. Morgan (1997), McLafferty (2004) and Jayasekara (2012) advocate the use of homogenous focus groups and reported the advantage of facilitating discussions when participants share similar experiences and characteristics, which assists their comfort in exploring issues.

Duration of focus groups

There is variation on the time required to perform focus group interviews, ranging from 1–2 hours depending on group size (Basch, 1987; Krueger, 1994; Redmond and Curtis, 2009; Doody et al., 2013). The focus group size of 4–6 participants equated to an estimated duration of one hour. The rationale for this was pragmatic, in that the CCP timetable dictated that the only time the students were all together at the end of the programme was following their summative presentations; they would be unlikely to stay and contribute for longer periods. In practice, the focus groups lasted 40–60 minutes, which was sufficient.

Number

The number of focus groups needs to be sufficient to meet the demands of the research study, and consider the number of participants and resource limitations (Barbour and Kitzinger, 1999; Mc Lafferty, 2004). Krueger (1994) suggests a minimum of three and a maximum of 12, whist Kitzinger (1995) acknowledged that most studies use just a few. The

intent was to understand local issues, rather than to generalise and this was achieved within the 21 focus groups detailed in the table below. Note a focus group with the lead nurses was not required at the end of the study as their views were made clear during a normal lead nurse meeting.

Table 2. Focus group summary: participants, number performed and timing.

Participants	Number of focus groups	Timing
PBEs (n=10)	4	Start and end of study
Managers & lecturers (n=5)	3	
Lead nurses (n=10)	1	Start of the study
Students (n=62)	13	Pre- and post-course

The interviews were conducted in an environment that offered privacy, with participants facing each other seated around a table, allowing participants to lean forward and be less self-conscious (Basch, 1987; Krueger, 1994).

Focus group question formulation

The number and style of questions is dependent on the research question, the purpose of the study and the type of data required (Redmond and Curtis, 2009). To achieve consistency and retain focus, an interview guide was developed based upon guidance from Vaughn et al. (1996) and Redmond and Curtis (2009). Questions were presented using straight forward language, arranged in a logical order, to explore the views of the participants within a controlled forum.

Interview structure can vary depending on whether an unstructured, structured or semi-structured approach is used. These were focused interviews and therefore a semi-structured approach using mainly open questions was used to facilitate discussion of the key issues. The semi-structured approach allowed us to collect data in an efficient and focused manner, exploring an increased number of questions, seven to nine compared to the normal four to six questions (Morgan, 1997; Saks and Allsop, 2007; Redmond and Curtis, 2009) without restricting the discussion. The semi-structured approach provided the flexibility to probe responses and ask additional questions. This is a key strength of this technique (Redmond and Curtis, 2009; Stewart and Shamdasani, 2015) that allowed a natural progression from general to more specific questions.

Role of the moderator

The skills of the person who conducts the focus group interview within this setting is key to the quality of the data that is generated. The role is described as a 'moderator' (Krueger, 1994; McLafferty, 2004; Puchta and Potter, 2004) and as a 'facilitator' by Barbour and Kitzinger (1999:14). The titles differ but there is consensus relating to the role. The moderator should 'create a non-threatening climate that encourages all participants to share views; facilitating interaction among members' (Basch, 1987:415). A template guidance was developed to provide structure and consistency of approach including setting the scene, dialogue and closure. This guide stated the purpose, roles and ground rules and provided a useful practical adjunct (Hopkins, 2008; Krueger and Casey, 2015), and is shared below.

FOCUS GROUPS

At the start of each focus group (size 3-12 participants)

- The moderator must set out and agree ground rules with participants

Set:

- Purpose is to learn their views and ideas on how we can improve critical care education as we move towards an all-graduate profession.
- Remind them that participation is voluntary. Check they have received information sheets & consented.
- They have been selected because they are key stakeholders.
- "Your opinions are important to me, all I want to know is what you think- this isn't a test and there isn't one answer to the questions I want to ask" (Hopkins, 2008:111). It is important to learn all their views.
- Views are expressed in strict confidence, ask them to agree to respect each other views, not interrupt other participants when they are speaking (speak one at a time please as we are recording) and maintain confidences.
- The interview will last about an hour and will follow a set pattern of questions
- I hope these questions will stimulate discussion amongst you. I will not be contributing to the discussion, my role is to moderate and facilitate (Breen, 2007).
- Set the group at ease participants to state their first names at start to assist transcription.

Dialogue: Moderator role is to remain neutral on the subject matter, interjecting to seek elaboration, guide the flow and yet retain focus or correct any misinformation (Krueger,1994).

Closure:
At the end of the focus group
Do you think we have missed anything?
Summarise the views at the end of the interview, which allows the participants to verify or correct your account, and provides a succinct record Hopkins (2008:110).
A consensus is not required.
Ask if they enjoyed and valued the opportunity of providing feedback
Thank them for their contributions

Puchta and Potter (2004) identify the need to connect with the group by adopting a relaxed approach, using common language including slang words, but balancing this with not becoming one of the group. The moderator should avoid interrupting participants prematurely, recognising when to keep quiet, to encourage interaction between the participants. In practice, this was difficult, with a desire to steer the conversation set alongside the need to listen to and respect the groups' discussions and views (whilst at the same time being conscious of time pressures). These discussions provided the flexibility that rigid classroom observations and questionnaires lacked, allowing me to offer explanations or probe further when required. The focus groups provided a forum for individuals to argue with the interviewer and each other in a way that helps to lay things bare (Bryman and Bell, 2015). Similar to the experience of Basch (1987), these discussions proved valuable in generating new questions.

Criticisms and limitations of focus groups

As with other research methods, focus groups have some criticisms and limitations. The fact that they generally include a relatively small sample of the population means they cannot be used in isolation to establish with any certainty that the views expressed are generalisable to the wider population (Basch, 1987; Jamieson and Williams, 2003; Saks and Allsop, 2007). The number of participants is constrained because they are more time consuming to perform and analyse than quantitative procedures such as questionnaires with closed questions (Breen, 2006; Jayasekara, 2012).

A limitation is the time required to transcribe verbatim and analyse 40–60 minute audio recordings (Jayasekara, 2012). I used voice recognition software, but the transcription process and the subsequent analysis of the data remained a time-consuming process. Therefore, it was for reasons of practicality that focus group use was limited to approximately 20% of students, plus all PBEs, lead nurses and managers.

A criticism has also been that views of a particular group may be unrepresentative and the results from different groups can vary considerably, questioning the reliability of the data (Krueger, 1994:36-37). This can be because the sample was unrepresentative or because the group was dominated by the more confident or vocal participants, which can suppress or coerce the opinions of others (Bryman and Bell, 2015). Alternatively, the moderator may lead a group to answers, resulting in choreographed outcomes (Abbott and Sapsford, 1997; Puchta and Potter, 2004:89). To overcome such concerns over reliability, two focus groups were performed with students at each stage of the study to allow comparison of results, which were then compared with the results of the questionnaires from the remaining 80% of the student population. Transcriptions were colour coded to identify each participant's

contribution, making the process of detecting patterns of domination or coercion by individual/s easier to observe (Appendix 8 and 9).

The challenges in getting participants into the same place at the same time are well recognised (Breen, 2006; Bryman and Bell, 2015). This was overcome with the pre-course students as time was allocated for the focus groups during the induction day. Accessing the students post course was far more challenging, as the only time to catch them all together was after their summative presentations, when they were naturally keen to get away. During the first two action research cycles this proved stressful, due to the difficulty in predicting if sufficient numbers would participate, partly because the alternative of completing a questionnaire provided students with a much quicker option. This was overcome by the introduction of refreshments, which created a positive and social atmosphere.

The reliability of thematic analysis has been questioned, as the transcriptions need to authentically reflect what people say, how they say it, the patterns of interaction and reflect the context in which it took place (Breen, 2007:467). The use of an assistant to make notes relating to body language or interactions, to add depth to the transcriptions, was recommended by Saks and Allsop (2007). This was used during the initial student focus group, but the presence of an assistant within such small groups was not helpful to creating a relaxed atmosphere and this was discontinued. Instead, care was given to improve transcription reliability via the inclusion of intonation and pauses.

All the recordings were transcribed and analysed by the principal researcher to achieve internal consistency (Kidd and Parshall, 2000). Normally only the facilitator has access to these recordings, raising the issue of the trustworthiness and authenticity of any reported

findings or the representativeness of any selected excerpts (Jayasekara, 2012). It was important that the MCCC staff had confidence in the data and to assist this, coded versions of transcripts were shared for transparency.

Questionnaires

Surveys are designed to produce statistics about the target population (Fowler, 2009). The self-completion questionnaires achieved this, producing useful quantifiable data, and the provision of a 'comments' space provided all students with the opportunity to explain their responses. The method allowed us to survey the views of students who did not participate in the focus groups, and do this in a relatively quick and cost effective manner (Saks and Allsop, 2007; Bowling, 2014; Bryman and Bell, 2015). In doing so, the questionnaires delivered more representative data than would have been achieved by focus groups alone. Their use represents a pragmatic solution to the inclusion of all students, combined with a desire to balance the qualitative aspects of the study with quantifiable data. A longitudinal analytical survey model, as described by Bowling (2014), was used to establish any patterns that were developing within this dynamic population, with questionnaires repeated every six months with each student cohort.

The questionnaires were distributed to students in the class by either the MCCC educators or myself. To protect anonymity and reduce any impact on responses caused by the presence of the interviewer / researcher (Bryman and Bell, 2015), the students were left to complete their questionnaires, with responses placed in a box. The questions used for the questionnaires and focus groups mirrored each other to allow comparative analysis and convergence of data.

The quality of data generated by questionnaires is dependent on the clarity and design of the questions (Scott and Usher, 2011). This is a recognised problem associated with self-completion questionnaires, as there is no opportunity for me to provide explanations or influence the extent to which students choose to complete the questionnaire (Fowler, 2009; Bryman and Bell, 2015).

Questionnaire design

A well-designed questionnaire is fundamental to the production of valid and reliable data that answers the research questions. Designing effective questionnaires is recognised as complex and notoriously difficult to get right (Bowling, 2014). The design process involves formulating the right questions and presenting them to a selected audience in a clear, unambiguous, meaningful and easy-to-follow manner, supported by clear completion instructions. Structured questionnaires with fixed questions ensured that information was presented to all respondents in the same way (see Bowling, 2014). Consideration was given to create a format that was easy on the eye, with attention given to multiple aspects including the overall appearance, font size and case, with the number of questions restricted to 7–11. The overall questionnaire size was limited to no more than two sides of A4 paper to avoid respondent fatigue and issues with partial completion, which have been well noted (Fowler, 2009; Bowling, 2014; Bryman and Bell, 2015).

A key consideration when designing questionnaires is whether to use open or closed questions (Bryman and Bell, 2015). Fowler (2009) rejected the use of open questions because they are less easy to process and produce answers that are less easy to quantify. Bowling (2014) strongly recommends open and closed questions, and these were used to

evaluate issues ranging from student expectations to trends in levels of satisfaction and clinical confidence. Open questions were mainly used during the pre-course questionnaires, because these are recognised as useful when exploring complex issues (Bowling, 2014), such as the knowledge and skills students expect to develop from undertaking the Critical Care Programme.

Closed questions with fixed alternatives provided such as ‘yes / no / unsure’ or numeric Likert scales were used more frequently (though not exclusively) in the post-course questionnaires. These had the advantage of being easier and quicker for respondents to answer, whilst delivering data that was measurable and straightforward to analyse (Hammond and Wellington, 2013; Bowling, 2014; Bryman and Bell, 2015). Likert numeric scales with clear explanations of how to indicate responses were used to provide variation and allow students to indicate the intensity of their feelings. The use of these 0–5 scales allowed us to perform more statistical analysis by calculating mean cohort scores, as well as the range for characteristics such as changes in students’ clinical confidence.

The use of closed questions alone risked constraining spontaneity, potentially depriving us of true perspectives and insights, or forcing respondents to select inappropriate answers (Bowling, 2014). To overcome this, a follow-up probing question or ‘comments’ space was used after each question, allowing the opportunity for students to elaborate or explain their views more precisely (Covell et al., 2012). These spaces for comment were valuable for several reasons. Firstly, they provided an indication of how well respondents understood closed ‘yes / no’ questions, generating an increased level of confidence in the reliability of the data. Secondly, they added insight into the views of the respondents not provided by the closed questions, allowing key themes such as evidence-based practice and case studies

to be identified. These written responses added breadth and authenticity to the data by recording student views in their own words, which is recognised as appropriate to participatory action research (Cohen et al., 2011:389).

Formulation and piloting of the questionnaire

The questions were designed to help us learn the views of the students, gaining their perspective on specific aspects of the programme, so informing the action research process. The key objective was to ensure questions were aligned to answering the aims of the study and relevant to the participants. Krueger (1994:64) noted that achieving clarity and simplicity is essential, and this is generally reduced as the length of the question increases. Attention was also given to avoiding terminology that was meaningful to me, but unlikely to be understood by the students.

The quality of a questionnaire relies on the basic assumption that all the respondents will interpret the questions in the same and correct way (Opie, 2004). To test this, the questionnaire (and participant information sheet) was piloted with several groups of students from the September 2012 cohort as they exited the programme. Bell's (2005) evaluation model was used to ascertain their views in a focused and structured manner.

How long did it take you to complete?

1. Were the instructions clear?
2. Were any of the questions unclear or ambiguous? If so, will you say which and why?
3. Did you object to answering any of the questions?
4. In your opinion, has any major topic been omitted?
5. Was the layout of the questionnaire clear/attractive?
6. Any comments?

Bell's evaluation model (2005)

These students were representative of, but not part of the research population, which is important to avoid respondent sensitisation, which could have influenced their answers (Opie, 2004:105). This process was useful in refining the initial questions and format of the questionnaire. The questions were presented in the same order in the questionnaires and focus groups to maintain consistency and parity. The questions selected were filtered depending upon the participant group e.g. PBE, student, lead nurse, to maintain relevance. As the study progressed, the formulation and timing of new questions was informed by the data, the thoughts of the Curriculum Working Group and through research supervision.

Sampling

The student participants were 'naturally occurring', all sharing the characteristic of being nurses working within critical care. The cohort size of 21–50 students meant it was not practical to include every student in the focus groups. The students who did not participate in a focus group were asked to complete a questionnaire, which contained the same questions as used in the focus group.

The sampling of students to participate in the focus groups within this homogenous population was pragmatic. The students commencing the CCP were mailed a participant information sheet (appendix 1) inviting them to participate in the research study of as part of their pre-course MCCC information pack. At the start of the CCP induction day, they were asked if they would consent to participate in the study. Students were then divided into those participating in focus groups or questionnaires using systematic random sampling, which is recognised as a legitimate and simple way of selecting participants and eliminating inherent selection bias (Krueger, 1994; Saks and Allsop, 2007). The process involved identifying focus group participants by selecting every fifth name on the cohort register, inviting 8–12

students to participate. These students were randomly divided into two focus groups of 4–6 participants. This negated the potential for deliberate or unintentional interference with randomisation as highlighted by Pildal et al. (2007).

The process for sampling students as they completed the course was driven by pragmatic factors. Convenience sampling was used because the only time to gain access to students at the end of the CCP was after they had completed their summative presentations and were preparing to leave the MCCC. These students were asked if they would be prepared to participate in a focus group, and those were prepared to stay were included. The remaining students were asked to complete the printed questionnaire, provided with privacy to complete this, with instructions to place completed questionnaires in a box.

This approach produced focus groups of students who were at the same stage of the course, either commencing or completing it, which allowed them to contribute their views and shared experiences in a meaningful way (see Redmond and Curtis, 2009). There was also a degree of heterogeneity created by their variant levels of critical care experience, working in different critical care units and varied ages, which Holloway and Wheeler (2010) note may influence contributions and allow for the exchange of ideas.

The PBEs (n=10), managers (n=3) and lead nurses (10) were all invited to participate in focus groups. The PBEs were of similar ages, experience and background and after a briefing using the participant information sheet, all were keen to participate. The lead nurses were informed purpose of the study and provided with participant information sheets by the MCCC manager who attend their monthly meetings, and all agreed to participate. The focus group was performed during one of these lead nurse meetings. It was essential from a

political and social justice perspective that all these senior nurses, managers or educators were given the opportunity to express their views, as they contributed compelling and insightful thoughts on these issues. These staff worked together regularly and could relate to each other. The focus group discussions provided a structured reflective outlet and a means of sharing and recording their views in a constructive manner.

Ethical Considerations

It was a primary responsibility to ensure no participants were harmed because of being involved in this study (Bryman and Bell, 2015). While the objective of improving the curriculum for the benefit of students, educators and service was ethically sound, it was important to ensure that this was achieved without detriment to any participants. Bryman and Bell (2015) identified potential transgressions including lack of informed consent, invasion of privacy and deception. Participation was entirely voluntary, with the invitation accompanied by information sheets (Appendix 1) explaining the purpose, their contribution, the use and storage of data and right to withdraw at any time. All participants were aware of their role and rights prior to agreeing to participate. Written consent was provided by all participants (Appendix 2).

Confidentiality is a common ethical issue in action research relating to sharing of participants' information (Dillman, 2007; Bowling, 2014). Data was stored securely to protect the interests of participants and maintain researcher-participant trust. All transcriptions and quotations derived from the questionnaires and focus groups were coded to assure anonymity and maintain confidentiality. Ethical approval was granted by Manchester Metropolitan University (Appendix 3) and the MCCC prior to commencing the study.

The educator's primary role is to teach, and this research did not interfere with or disrupt the teaching experience or breach confidentiality. The maintenance of this ethical standard throughout the study depended upon the relationship between the action researcher and participants (Coghlan and Brannick, 2014). It was difficult to maintain and guarantee confidentiality with classroom observations as the reality was that everyone knew who taught a named session. The question of with whom feedback from the classroom observations should be shared proved the most sensitive issue.

Barbour and Kitzinger (1999:17) acknowledged similar issues with focus groups, where the moderator could not guarantee that shared confidences would be respected outside the confines of the group, despite the presence of ground rules. The temptation to gossip may be strong if participants are part of the same social network, as is the case at the MCCC. Barbour and Kitzinger (1999) suggested the establishment of an ethical covenant so that the participants share ownership of the findings. This approach resulted in a verbal covenant with the PBEs that only the general themes would be shared with managers and other tutors at the MCCC. This covenant was useful in resisting calls from managers to view the detailed reports, respecting the rights of the educators and succeeded in maintaining goodwill and trust.

Conclusion

The mixed method design provided all the key stakeholders with a voice, and in doing so, provided them with influence and authority over future practice. Action research was selected because the process was part of the solution in helping us to learn and move forward together as a team. The mixed method approach allowed inclusivity, creating a research study in which everyone who wanted to be involved was involved. The multiple

data collection tools provided data that was representative of the population, with statistics enriched by the social, human interaction of focus groups. The combination of methods complimented each other and the convergence of data during the analysis and interpretation stages was useful in gaining a deeper understanding, whilst affirming the authenticity and validity of the data.

Chapter 4. Taking Action: Data Collection, Analysis and Local Dissemination

This chapter begins an account of action research that will continue over the next two chapters. It describes participatory action research performed with colleagues, as part of a shared transformational journey. The interventions were agreed based on evidence presented at the end of each cycle of action research. It was imperative that this data was accurate, reliable and shared in a clear format to enable the steering group to agree informed decisions on the best way forward. This chapter outlines the process of data collection and local dissemination.

Action research is not just about achieving change, or this would simply be a management exercise. To merit the title 'research', this study must be more than a reflective account of change, rather it must represent 'a systematic investigation, a way of knowing that lays bare its methods for all to see' (Parahoo, 2013:10). The decision to include a short chapter on the story of data collection, analysis and local dissemination was based upon a recognition and agreement with Morton Cooper (2000:81) that one of the most challenging parts of action research is the process of evaluating and transforming the large volumes of data into a readable and effective report. The chapter is used to establish the cultural validity of the data by explaining how it was collected, interpreted and utilised as part of transforming the learning ecology[8].

[8] Siemens (2007:63) defined a learning ecology as 'the space in which learning occurs'.

The chapter will share the systematic processes used to critically examine and interpret data, generating the evidence which informed subsequent research cycles. In a disciplined manner, the issues for investigation were agreed, questions defined and the collected raw data analysed by searching for key themes or trends. This was disseminated to the Programme Committee at the end of each six-month research cycle, providing a collective forum to decide on the significance of data, agree what (if anything) had been learnt, if any actions or changes were now warranted and what we needed to learn more about. This critically evaluative process included ongoing questioning of whether the research tools were fulfilling the data collection functions for which they were designed and if they were posing the right questions. The quality and focus of this data was an acid test of the appropriateness of the action research methodology, and the ability of the research instruments to inform and evaluate the changes made to the curriculum.

What Counted as Data?

Data refers to all the items of information gathered during the research project (McAteer, 2013). Data sets relating to each cohort and theme were collated by combining the information from the focus groups, questionnaires and classroom observations. The quality of this data constitutes the ‘evidence’, which forms the basis for any claims made by this research.

As Gray (2014) explains, action research is a modern approach to research, concerned with not only analysing practice, but also trying to change it. In practice, this involved identifying and addressing problems with the other participants, being involved as a change agent, rather than a detached scientist. This immersion resulted in a qualitative stance, working closely with the MCCC team to learn and improve the programme together. To provide

assurance of the integrity of the data, it is necessary to provide a clear and transparent record of how this information was collected. Gray (2014) advises that data gathering should be systematic, with a permanent record of what took place, and recommends using a variety of methods (as in this study) to allow data triangulation.

Multiple Sources of Data

This data was derived from multiple sources including students, PBEs, lead nurses, classroom observations and programme key performance indicators. Combining evidence from these varied sources provided convergence of data, allowing us to benefit from hearing different perspectives, whilst retaining a level of objectivity by observing the reality of classroom teaching and learning practice. The convergence of data from both multiple sources and research methods provided a holistic view, engendering confidence that the data was authentic and a trustworthy evidence base to inform decision making.

Students formed the main source of data within this study with 237 contributing their time and energies to providing this data set. They completed 278 questionnaires, with a further 62 students participating in 12 focus groups (28% of the student population). Classroom observation of each of the 12 study days was performed over the course of the first year of the study and repeated in the second year (n=24).

Key performance indicators

- Student academic performance in summative assignments (first attempt)
- Student confidence as critical care nurses in practice (measured using a Likert scale)

A personal diary

A personal diary is a key feature in action research (Elliot, 1991; Whitehead, 2002; McNiff, 2013). It provided a detailed narrative of events, a chronological record including reflections and interpretations of events. This was cathartic in capturing feelings, and proved important in pulling strands of information together; this reflexivity (see Parahoo, 2013; McAteer, 2013) generated personal insights relating to my role, control, democracy and the need to retain focus on ways of empowering rather than oppressing participants.

Data Collection

The data collection began with focus group interviews with the PBEs on August 22nd 2013 and finished when I interviewed them again at the end of the study on 29th September 2015. A research plan provided a detailed map with valuable milestones. Consent forms were collected from all participants, numbered and stored together. The focus group recordings were transferred digitally to my computer for future analysis and transcription. All the data for each cohort and each cycle was collated together and stored securely. The data was processed in a timely manner, driven by the need to evaluate our interventions and feedback to the steering and working groups.

Recording and Transcription of Focus Group Recordings

The focus groups were audio recorded; the recordings were stored securely before being erased from the recording device to maintain confidentiality. Video recording was not used as it was considered too intrusive as it may have inhibited participation and contributions. A quiet environment was achieved for all the interviews and the quality of the audio recording achieved was excellent. These audio recordings were transcribed verbatim by the principal researcher using Dragon dictation software, which was accurate and easy to use. The

transcriptions produced using this software required close observation and regular correction. The recordings were therefore listened to alongside the transcripts to confirm missing or inaccurate data (Bryman and Bell, 2015).

This process involved some trial and error. During the first focus group, participants were asked to state their first names at the start of the interviews to allow identification during transcription. In practice, this proved inadequate to allow clear identification of participants and subsequent groups were asked to speak a full sentence, which made it easier to detect different accents and tones. This was not highlighted in the literature, but from a practical perspective it was essential that I could identify participants, and this can be problematic in larger focus groups. The objective was to produce an accurate representation of both individual contributions and group conversations. Redmond and Curtis (2009) explain this means considering how participants spoke, keeping to the language they used, the intensity of their voice and feelings about the topic.

The transcriptions were coded with each student allocated a different colour, assisting analysis of everyone's contributions at a glance, and highlighting the interventions of the moderator, providing increased visibility on my role as a moderator. The intonation of the person speaking was illustrated using underlining to indicate emphasis and brackets to provide further description, such as group agreement, a pause or laughter.

Questionnaire Response Rates

A common pitfall of using questionnaires is the potential for low response rates (Dillman, 2007; Bowling, 2014; Bryman and Bell, 2015). Response rates are important because high response rates increase the validity of results by ensuring that the data collected represents the populations' views (Cormack, 2015). Whilst acknowledging that these risks are

particularly associated with postal questionnaires, achieving high response rates was dependent upon the motivation and good will of the PBEs to distribute them and the students to complete them. A response rate of 50-60% is recognised as barely acceptable, and over 75% rates as good (Bowling, 2014) and over 85% excellent (Bryman and Bell, 2015). A summary of the response rates is presented in table 3 below.

Table 3. Summary of questionnaire responses by student cohort

Student cohorts	Pre -course response rates	Post course response rates
September 2012	N/A*	54%
February 2013	N/A*	82%
September 2013	100%	79%
February 2014	100%	100%
September 2014	100%	100%
February 2015	100%	N/A*

Note* that as the CCP is a rolling programme with intakes every six months it was not possible to perform pre- and post-course questionnaires with each cohort. As the study commenced in September 2013, there were no pre-course questionnaires for the September and February 2013 cohorts; and because the study was completed in September 2015, there are no post-course questionnaires for the February 2015 cohort as they would not complete the programme until six months after the study was completed.

A good response rate was achieved by using the following methods: an inclusive approach involving all the students who were not participating in the focus groups; the use of cover letters sent to all students when they enrolled on the programme; and administering the

questionnaires by hand, resulting in a 100% response rate for pre-course students. An initial poor post-course response rate of 54% was caused by some educators agreeing and then 'forgetting' to distribute questionnaires, which may have reflected passive resistance or just forgetfulness. The remaining response rates were very good to excellent, reaching 100% by the February 2014 cohort.

Addressing Criticisms of Self-completion Questionnaires

There are several potential disadvantages associated with using self-completion questionnaires including a loss of control, which can result in non- or partial completion; or incorrect interpretation of the questions by participants, which can in turn damage the reliability and validity of the data. Puchta and Potter (2004:48) felt that questionnaires were less engaging than focus groups, constraining people's responses and depriving them of the opportunity to fully express their views. This concern is valid, as the questionnaires did not provide the opportunity for follow-up questions to probe and explore the meaning of answers. It is accepted that there existed the potential for researcher bias either in the design of the questionnaire or during the transcription and interpretation of the data (Bowling, 2014). To minimise this and assist transparency, anonymised copies of the questionnaires were shared with the Curriculum Working Group for inspection before and after completion.

Key Performance Indicators

The quality indicators of student performance were derived from the cohort unit reports, which include details of unit and programme completion rates, pass at first attempt and attrition rates. These were presented to the Exam Board and Programme Committee every

six months and formed part of the Continuous Improvement and Programme Development plans. This provided a shared verifiable data source.

Data Analysis methods

Content and thematic analysis methods were used to analyse and converge the data from the classroom observations, focus groups and questionnaires into meaningful findings (see Boyatzis, 1998; Massey, 2011). Thematic analysis is frequently used in qualitative research, to identify, analyze, and report the patterns (themes) found within a data set (Braun & Clarke, 2006). This explorative and inductive approach to data analysis suited our study because it helped us to learn what the participants felt about key issues and generate data, such as voice excerpts that provided an accurate and authentic representation of participant views to increase the trustworthiness of the data (see Elo and Kyngas, 2008). As the study progressed, I increasingly utilised content analysis methods, because they allowed me to quantify the large volume of data into meaningful and representative statistics relating the participants responses to the issues surveyed (Vaismoradi, et al., 2013, Treadwell, 2014).

Content analysis was used to objectively determine the frequency of categories such as the number of times students used terms such as ‘evidence base’ and ‘confidence’; or to quantify the strength of feeling on some issues such as levels of ‘student motivation’ (see (Dixon-Woods, 2005; Elo and Kyngas, 2008). Content analysis techniques were valuable because the counting of participant responses in different categories generated descriptive statistics, which provided visual representation of facts across the study. It supported the analysis of data derived from Likert scales, such as median and range to interrogate the data more rigorously; generating greater insight into issues such as students’ perception of

their clinical and academic learning gain as a result of attending the CCP. This blended use of these two methods worked effectively because they share many similarities as illustrated in the table below (see Vaismoradi, et al., 2013). This approach led to the generation of educational themes that were important to meeting the aim of the study, such as ensuring critical care nurse education focuses of the care of patients and their families; evaluating the impact formative assessments have on student learning gain; and eventually to the development of broader concepts, such as that of transforming a learning ecology.

Data analysis

The data was collected, analysed and interpreted in synchrony with the action research cyclical process informing the subsequent interventions to the programme made by the Curriculum Working Group. A large volume of data was obtained from the 20 focus group recordings, 10 sets of cohort questionnaires and 24 classroom observations. A five-step method of data analysis was used, following the conventions of thematic and content analysis outlined by Braun and Clarke (2008; 2018) and Elo and Kyngas (2008), which are presented below.

Thematic analysis (Braun and Clarke, 2008)	**Content analysis (Elo and Kyngas, 2008)**
Familiarisation with the data. Transcribing and reading the data, noting down initial ideas.	*Preparation.* Obtaining a sense of the whole, selecting the units for analysis. Being immersed in the data.
Generating initial codes. Coding interesting features of the data systematically across the entire data set. *Searching for themes.* Collating codes into potential themes. Ongoing process of reviewing these themes, potentially to grouping into larger themes.	*Organising & opening coding,* creating initial categories, formulating general descriptions, sub categories relating to the research topic
Reporting the themes and relating this back to the research question	*Reporting* the analysing process and results through models, categories and a story line

Step 1. Identify the data set

The data was divided into meaningful units for analysis; a process that is used in content analysis. Student focus group transcriptions and questionnaire responses from each cohort were grouped together to provide an overall perspective of the views of each cohort. Other data sets included the classroom observations or focus groups with all the educators. This identification of data sets was useful because it allowed student cohort or educator responses to be viewed as a whole (see Graneheim and Lundman, 2004).

Step 2. Familiarisation with the data

The focus groups produced a large volume of transcribed narrative, a 'thicket of prose' (Bryman and Bell, 2015:424). Data was generated from the focus group recordings by repeated listening, alongside analysis of the printed transcriptions. This immersion enabled me to sort and categorise (code) the data, 'listening' to participant voices, leading to the identification and greater understanding of prominent themes (see Dixon-Woods, 2005; Braun and Clarke, 2006).

Step 3. Organise and generate initial codes (categories)

The process involved openly coding the data by making notes on the transcriptions and questionnaires, underlining key words or phrases such as 'evidence-based practice' or 'improve patient care'. Data analysis was an inductive process, with categories generated from the presence of common terms or descriptors recorded by the participants, such as *decision making,* or broader themes relating to the *basic* nature of the acute care unit content.

Step 4. Label the categories and decide how they relate to each other

As the study progressed, the initial categories and themes were reviewed to make sense of the data, and some terms or phrases were merged into single groups. An example is when participants used similar words relating to learning the research underpinning care, this was coded in the *'evidence based care'* category (see Polit and Beck, 2012, Braun and Clarke, 2018). The occurrence of these categories and responses to questions was translated into statistics using content analysis. This produced descriptive statistics in the form of percentages derived from the closed questions and Likert scales used in the questionnaires and during focus groups. This process was based on the guidance offered by Bailey et al. (2014), with mean, median and range used when analysing Likert scale (1–5) responses. The range was particularly useful in conveying the divergence of opinion on issues such as fairness of the CCP writing assessment or assessing participants' level of perceived clinical confidence at the end of the programme, establishing these issues as significant themes.

Step 5. Reporting phase

In the reporting phase, these descriptive statistics were presented alongside excerpts, to construct statistical evidence, alongside the authentic voices of participants to the working group and Programme Committee. The convergence and subsequent interpretation of this information allowed us to identify key themes, analyse the meaning of this data in relation to informing the action research and generating new insights.

Dissemination

The data was presented to the key stakeholders on a cyclical basis in a consistent, anonymised and accurate manner, so that it could be easily understood. Validation of the data was examined through concurrent analysis and discussion within the Curriculum Working Group and Programme Committee. This was essential: the evidence informed

decision-making underpinning interventions that would impact not only on the quality of critical care education in Greater Manchester, but also, by implication, critical care provision. This placed a large burden of responsibility on me to ensure the evidence was balanced, verifiable, authentic and transparent. All were essential to maintain the integrity and credibility of the data over the two years of the study, providing the confidence for us to make changes and learn together as a team.

Summaries of the evidence from each research cycle were used to share the large volumes of data in a timely manner. This provided an effective solution to the problem reported by Morton Copper (2000) of transforming the volume and variety of data produced by action research into a readable and understandable report. This enabled myself and the MCCC team to maintain a collective overview. This effectively formed a shared action plan, providing the steering group with an analytical tool for framing the issues, keeping us abreast of, the evidence, before agreeing actions and identifying areas for further investigation. This helped maintain a shared focus when deciding the significance of information, or prioritising issues that required further exploration or intervention. The retention of an overview of the action research process was challenging, and different formats of the summaries of evidence were developed to assist this process; this was useful in capturing and communicating the action research process to the team. A page from one of the summaries of evidence is presented below to provide an example of this format. It represents a single issue: ‘Why do we have a high academic referral rate?’ The language is straightforward, the data less detailed than my primary version, but it was useful in producing a less cluttered overview, and was intended to foster shared understanding, for myself as well as the rest of the team.

This collective approach was particularly important in this study because ‘research findings themselves are not solutions to problems’ (Parahoo, 2013:11). The findings merely provided evidence for the programme team to consider, before making or deferring decisions until further information was available. If changes to practice were later challenged (as turned out to be the case), there needed to be a clear record of the evidence underpinning the decisions and with whom decisions were agreed. This was recorded in the Continuous Improvement Plan, the working document of the Programme Committee, which meets twice per year. Each research cycle lasted six months, so data was always presented to the committee first, maintaining its position as the steering group. The Curriculum Working Group, consisting mainly of PBEs, operationalised these decisions, as recorded in the Curriculum Working Group minutes.

The monthly meetings maintained focus, keeping the dialogue open and importantly provided a forum for honest, open reflection and discussion. The inclusion of 10–12 highly educated critical care experts meant that ideas about the best way forward were frequently challenged. Grant et al. (2008) warned that in action research there is the risk that local views may be subjugated, with my interpretations being privileged, enabling the exertion of control over the local community. The summaries of evidence and attention given to maintaining the transparency and authenticity of the data were actions to prevent or at least mitigate this.

What did we want to know? **Why do we have a high academic referral rate?** **Is the curriculum well aligned?**

What we learnt from the first 2 cycles of action research (July – July 2014)	Our Actions	Outcome	What do we want to know now?	What did we learn in AR cycle 3?
Do students value the academic study in this course and do they think it will contribute to the their development as critical care nurses? **Students consistently value of the academic component** 65% (n=28 students) identified they felt that academic study would allow them to improve their clinical practice including decision making & patient care (86% in S13) 0% F14 thought it would have no value at all 26-28% of students' consistently make the link between 'evidence base' to inform their clinical decision-making	• Continue to monitor with S14 • Assess student views post-course • Study day materials need underpinning with EBP. • Need timetable for this to be achieved to be set • Classroom teaching to adopt strategies designed to develop critical thinking and student decision-making.	• CCP must be offered at a minimum of Degree or Masters level	Explore with pre & post course students - do they expect the academic study / has academic study contributed to their development as Critical Care Nurses, and if so, in what ways? Has it led them to adopt any EBP / influenced their decision making? Did the study days support them to help with the academic assignment?	S14 - 43%, & F15 - 33% expected EBP to improve their clinical decision making & care. 79% of S13 & 80% of F15 stated academic study would improve their clinical practice by linking theory to practice or EBP. No negative remarks. S14 Students 71% & 73% F15 cited help with academic writing (consistent with all earlier data) including critical analysis & literature searching as the primary areas they need support. Assignment briefs & formative assignments introduced. Want help with presentation skills & examples of Masters writing. F15 -60% cite time management as their biggest challenge. 87% cite working full time as a barrier &13% insufficient mentor time. S13 post course resit FG [21/11/14) identified support with learning to apply critical thinking in class as key need & deficit. Endorses introduction formative assignments. F14 -77% sought academic support, 9% did not. Only 59% engaged with formative assignment. Reasons: formative submission too early, need to be nearer hand in date & 2 students gained 'in-house support'

To remain true to the values of PAR methodology, it was important to listen to and respect the views of the community. At times the loss of control that would normally reside with the principal researcher (Gray, 2014) was frustrating. In some areas there was very gradual learning and change, such as negative attitudes towards master's level study. These are normal features of social change, which require patience and good people skills. This process involved learning that there is a need to let the data speak for itself and let the audience interpret it and then decide its value.

Accuracy and Authenticity of the Data

The data contained within the transcripts, that is what was said, remains the property of the participants who contributed to the interviews (McAteer, 2013), and so it was important to share these records with them so they could be agreed as an accurate record of what was said. This was achieved with staff from the MCCC and lead nurses, by the bi-annual *'summaries of evidence*' feedback containing verbatim quotations or excerpts from the transcripts. This was not achieved with the students, as they were disparate groups, either attending the MCCC separately or interviewed at the time they were leaving the programme. This was mitigated by the presence of student representatives at the Programme Committee, where the findings were shared and discussed.

Each study day was observed by either the principal researcher or one other lecturer from MMU. All the **t**utors were involved in the discussion of feedback at the end of each study day and were asked for their views, which were recorded. In all cases, tutors agreed the scores and comments were fair and were asked to feedback to us any related future changes. A copy of the classroom observation was shared with each member of the tutor team for each study day, providing them with the opportunity of redress and to allow them

to use the information to inform the development of their study days. The individual study day comments were not shared with the whole MCCC team, thereby maintaining participant confidentiality, privacy and support.

Conclusion

This chapter has presented the sources of data and the use of applied thematic analysis within action research. The purpose has been to illustrate how the data was managed, interpreted and shared within our research community to inform the transitions that are part of action research. The collection and handling of this data was highlighted, along with the importance of sharing information in a manner that others can easily understand, whilst maintaining the integrity, authenticity and confirmability of the data. The relinquishing of control within the context of participatory action research was recognised as a personal challenge, along with the realisation that community learning can be a bumpy and gradual process, where at times it is best to let the findings speak for themselves.

Chapter 5. The Findings: Combining Theory and Evidence to Improve Practice

This chapter presents and discusses the findings on a cyclical basis, illustrating the evolutionary nature of the action research process. It examines the data that formed the evidence base, upon which we based our interventions when striving to improve our educational practice. The transition was often slow and uncomfortable, with socio-political tensions emerging in response to curriculum change. It is an account of learning to work as a team to overcome these barriers, agreeing informed interventions that represent the essential 'action' component of this methodology.

Introduction

The findings are presented in chronological order to reflect the cyclical journey of discovery, learning and action. During the two-year longitudinal study, questions were asked and data gathered, analysed and interpreted by the steering group, before agreeing potential solutions or deciding there was insufficient evidence to intervene. This process of learning involved discussions that required ongoing reference to literature to inform potential solutions to practice issues, such as the use of case histories and formative assignments. These critical discussions are included after each research cycle to accurately reflect the action research process (see Davis, 2007). Brown et al. (2014) highlighted that evaluating the impact of interventions can be complex and this proved accurate, as we soon became conscious that making too many changes at the same time made it difficult to distinguish the individual impact from the cumulative.

The findings illustrate the gradual nature of social and educational change in participatory action research. They reflect the mixed methods used, with results often combined to produce meta-inferences from the integration of findings from quantitative and qualitative research. This triangulation or convergence of data is supported by Venkatesh et al. (2013), who concluded that when findings from qualitative and quantitative studies were presented separately, they lost the holistic representation of phenomenon, detracting from the collective value of mixed methods research.

The initial set of questions were developed to provide answers to fundamental questions related to the programme and how it was perceived by the educators, students and lead nurses who are dependent on the CCP for the supply and quality of critical care nurses.

Presentation of the Results and Findings

The findings are presented using figures to provide visual representations of the statistical data, a recognised characteristic of mixed method research, which can simplify complex interrelationships (see Teddlie and Tashakkori, 2010). These graphs and charts are supported by excerpts to overcome this characteristic by representing the human lived experience and contributions of the participants (see Green and Caracelli, 2003; Guest et al., 2012).

The first cycle of action research (August–December, 2013) collected data from all the key stakeholders, laying the foundations of our collective understanding. The second (January–July 2014) cycle includes results from the first set of classroom observations and repeated student evaluations as cohorts started and completed the programme; the third cycle (August–December 2014) repeated student evaluations. The fourth cycle (January–

September 2015) includes the results from the second set of classroom observations and presents overall data tables, which illustrate trends and learning across the study to demonstrate the overall impact of the action research.

Research Cycle 1 (August–December, 2013): Results and Findings

Population: Students, September 2013 (n=57) (commencing), 100% population: questionnaires (n=49/49), focus group (FG) (n=8); and September 2012 (n=36) (completing), 64% population: questionnaires (n=15/28), focus group (n=8);

PBE (n=11), lead nurses (n=10), university lecturers (n=2), MCCC managers (n=2).

Q.1. What motivates the students to attend the CCP? This open question was used to investigate concerns that many students were poorly motivated to attend the CCP, which was being reflected in their poor academic performance.

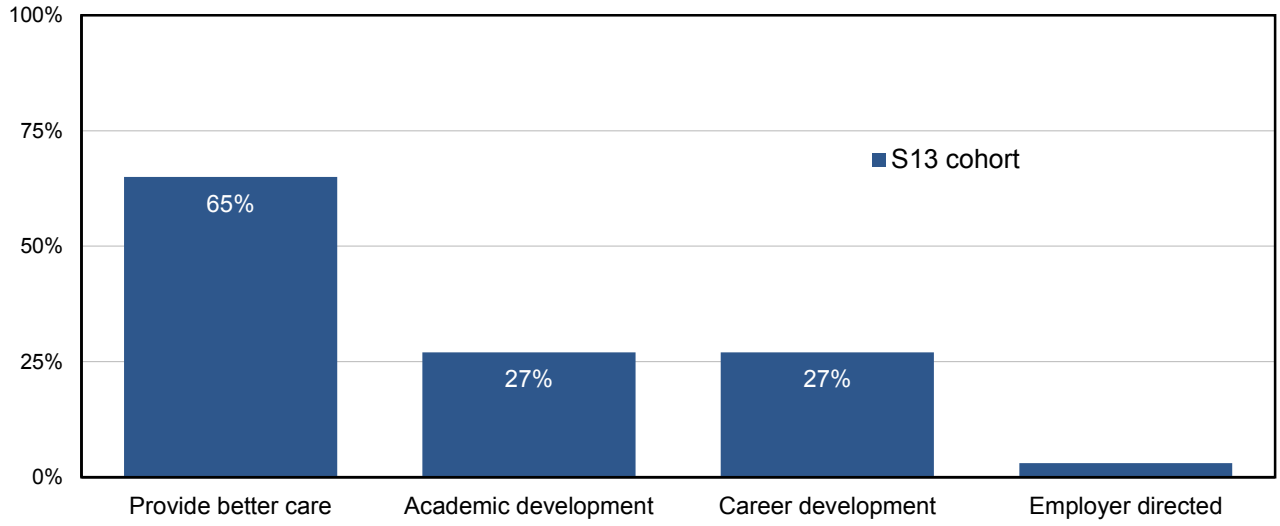

Figure 11. Student motivations

MCCC Managers and university link lecturer (FG 31/10/2013) believed students were well motivated, noting concern that some trusts misuse the CCP:

V: 'Some units use the CCP as an induction…one trust send students after only two months.'
W: 'It's about the perception as to what the purpose of the course is? Is it an introduction, or is it to increase and test the competence of somebody who already has knowledge and experience?'

PBEs (FG x 2, 22/8/2013) were evenly divided on this issue:

B: 'I would say about 50% [students] *would want to come'* [group agreement].
J: 'The newer starters are keener, others are coerced to attend.' (FG1).
D: 'I think they want to do it because they want to stay in critical care, and they want to develop skills to be confident and competent in the workplace.'
C: 'Those with diplomas very keen to do the critical care course' [agreed academic component was a key motivator] (FG2).
Lead nurses agreed attendance was mandatory, rejected a non-academic option (FG 6/12/2013).
X: 'If someone came to interview and did not want to do the course, I would not appoint them' [general agreement]*, 'when people attend and they come back, they are questioning practice and making suggestions for change.'*
A3: 'That's what we always look for…transferrable skills' [approval of group].

Students (S13 cohort, 27/8/2013):

Four constant themes (figure 4) were identified from the questionnaires and focus groups, which contrasted strongly with the views of many educators, with 90% students self-motivated, and only 3% (n=5) stating attendance was 'employer directed'.

The students' main motivation was to become better critical care nurses, able to provide improved care for patients. Another theme was the desire to learn '*best practice*'.

What did we learn?

- All nurses employed within this specialism in Greater Manchester are expected to attend the CCP.
- Students were highly motivated by a desire to improve their clinical practice, academic skills or progress their career, overcoming a common misconception that a lack of motivation was behind many students' poor academic performance.
- Lead nurses were unanimous that the CCP must be at degree or master's level.

Actions

- A non-academic pathway was discounted.
- Literature search required to better understand how higher education develops transferrable skills.
- Lead nurse to join Programme Committee.
- Results disseminated to all key stakeholders.

Q. 2. What is the purpose of the CCP?

The rationale of this open question was to identify if there was a shared vision for the CCP? It was motivated by concern that some critical care units were using the CCP as an induction course, enrolling nurses with little experience of working within this environment. This would reduce their ability to contribute to classroom discussions and insightfully reflect on practice within their academic assignments.

PBEs (FG 22/8/2013):

F: 'The purpose is to get competent critical care nurses that have insight into why they are doing what they are doing, using evidence-based practice' [all agreed].

B: [Develop a] *'Competent practitioner who can use current evidence base to support practice.'*

G: 'I think competence is higher on the agenda now and it's required earlier.'

V: 'You will not be able to critically analyse your own role, because you don't really understand it' [because they are still relative novices to ICU].

Lead nurses (6/12/2013):

A2: 'A skilled, competent workforce within the critical care.'

Moderator: 'To clarify, do you see it as a foundation course or as being like the ENB 100?'

Z: 'This is a national standard…a passport anywhere you want to work with in the country.'

Agreed: *'The purpose is to get competent critical care nurses that have insight into why they are doing what they are doing using evidence-based practice'*.

Moderator: '*What period of experience do students require prior to starting the CCP?'*

X: 'I agree what people have said about the timeframe for people to get experience on the unit and understand what they are actually doing before they start the course.'

Z: 'It's a bit of a shell shock when you start in ICU. It can be overwhelming really, and then they start the programme, there's an awful lot going on there' [agreement].

MCCC managers and link lecturer (31/10/2013):

V: 'Some units use the CCP as an induction…We recommend waiting 12 months as a minimum…the old program was a foundation, whereas this new program isn't.'

U: 'Some people may see the course as a quick fix, rather than developing higher-level skills in staff that have already got some experience within critical care.'

W: 'The key is the fact that it is a degree level programme, which means that a person has got to be at degree level from a clinical practice point of view, before you come on it (Q.2, participant, p.2).

E: 'Our course is very much an introduction and foundation programme for relatively newly qualified or relatively low experience nurses working in critical care.' [contrasting view].

Learning / outcome

- A course vision was agreed '*The purpose of the CCP is to develop competent critical care nurses that have insight into why they are doing what they are doing, using evidence-based practice'* and added to student nurse handbook.
- Lead nurses agreed with the principle that nurses required sufficient pre-course critical care experience before commencing the CCP (December 2013, CIP).
- These agreements were highly significant because they resulted in more experienced students. The period of pre-course experience was not defined.
- Results disseminated to the Programme Committee, Curriculum Working Group and lead nurses who agreed a shared vision and recorded this within the course literature.

Actions / what did we want to learn?

- Question fully answered in cycle one.
- Nurses must be competent within the critical care environment before commencing the CCP. In the second cycle, student views to be sought as to what this minimum period of critical experience should be set at prior to them being permitted to commence the CCP?

Q.3. Were students aware of the National Standards for Critical Care Nurse Education (CC3N, 2011)?

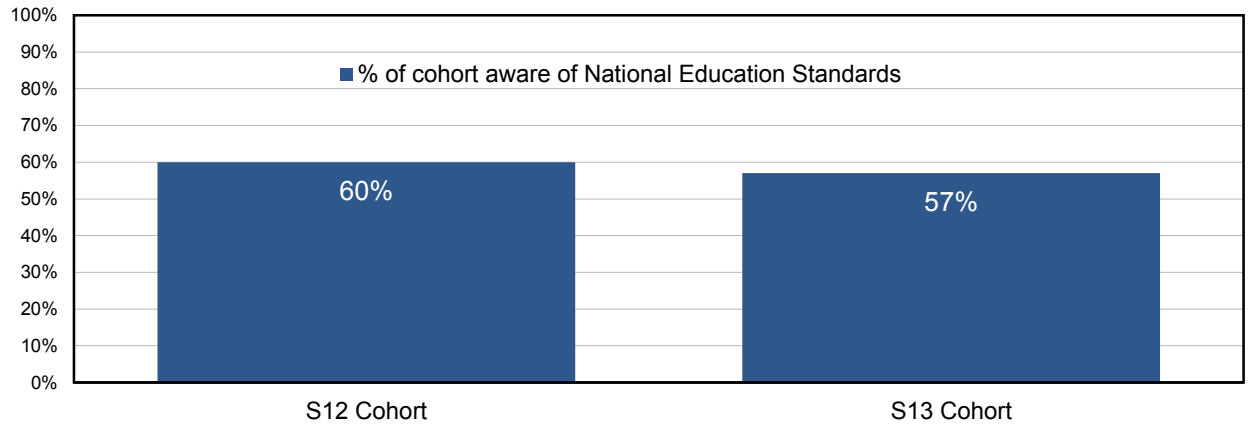

Figure 12. Are you aware of the National Standards for Critical Care Nurse Education?

The CCP is based upon these standards, delivering a nationally recognised and transferrable degree / master's critical care nurse qualification. The MCCC is one of a few centres in the UK to fully meet these standards. Were the unsure students aware these standards existed or that the CCP curriculum was based upon these standards? It was hoped that raising the level of awareness regarding these standards would better inform students and increase their level of motivation to study. Figure 12 illustrates 40–43% of students were unaware of the national critical care nurse education standards.

S13 students: 82.5% strongly supported these standards, citing:

- 43% value the academic credits (n=24)
- 14.5% value the national transferability of the qualification (n=8)
- 16% thought it would lead to improved patient care (n=9)
- neutral comments: (n=10), negative comments (n=1), no comment (n=5)

We explored the views of the other key stakeholders on the value the academic component affords these national education standards.

Other stakeholder views on the national critical care education standards

PBEs (22/8/2013):

H: '*I think that's a good thing'* [degree / master's level education].

B: 'It is a very good idea and it's good for all nurses to be degree level.'

J: 'My unit needs competent nurses…if you can give care that patients need, are a safe practitioner and know your limitations then I'm happy.'

B: 'Student training is all degree now…The ones that have been there a while and didn't do the degree… what is there for them?'

N: 'Look at the Keogh and Beswick reports…how do you make compassion academic?'

J: 'Nursing has evolved into a profession, education has become the universities.'

B: 'I disagree because I think you can be kind and clever at the same time.'

Lead nurses (6/12/2013):

A6: 'They are not going to want to qualify with a degree, then drop down [to a non-academic or diploma level] *…it is a recognition of the profession; we are degree level.'*

A2: We can challenge, analyse; it is developing the workforce of the future.'

Y: There are people out there who would like to be nurses, and would make very good nurses, but haven't got the academic acumen.'

X: 'Well they are not going to be nurses. They will not be able to be nurses anymore, because you have to have a degree' [cut off by Y].

Y: 'Well isn't that a shame?'

X: 'Well it is back to this argument; do you want people who are going to be able to think and make sense of all this information?'

A1: 'You would rather have somebody who can assess you, use critical analysis, and have those higher order thinking skills.'

A7: 'But it isn't wrong to want everybody in the profession to have all those skills?

X: 'How else would you raise standards? You need people who are going to be able to shake it up, and challenge.'

Managers and link lecturers (31/10/2013):

U: 'When I look back on my career, being able to critically analyse, make decisions and justify them, not only gives you confidence, you know you have been a better carer.'

W: 'I agree. It is about being able to be credible within a multidisciplinary team. It gives us professional credibility.'

V: 'It gives us the confidence to be able to work well within that team.'

Learning / outcome

- 40–43% students were unaware of the National Critical Care Nurse Education Standards.
- The majority of managers, lead nurses, university link lecturers and students were highly supportive of the national educational standards at degree / master's level.
- Some lead nurses and PBEs expressed concern regarding the barriers the standards pose to some nurses who lack academic acumen; with some PBEs resentful that academia was overshadowing the central basic needs for practical skills and compassionate nursing.

Actions / what did we want to learn?

- PBEs needed to raise awareness of these standards within their critical care units.
- CCP induction to include information on the critical care nurse education standards.
- There was a consensus in favour of these standards from PBEs, students and lead nurses, along with rejection of a non-academic or diploma pathway. Students strongly favoured the academic element, contrasting with the scepticism of some educators and to a lesser extent, lead nurses.
- Repeat questions with next cohort to evaluate impact of these actions.

Q.4. Were students accessing the CCP at their preferred academic level?

This question evaluated students' perception of whether the admission process recruited them to the academic level that best reflected their ability and personal goals? The CCP was offered at either degree or master's level.

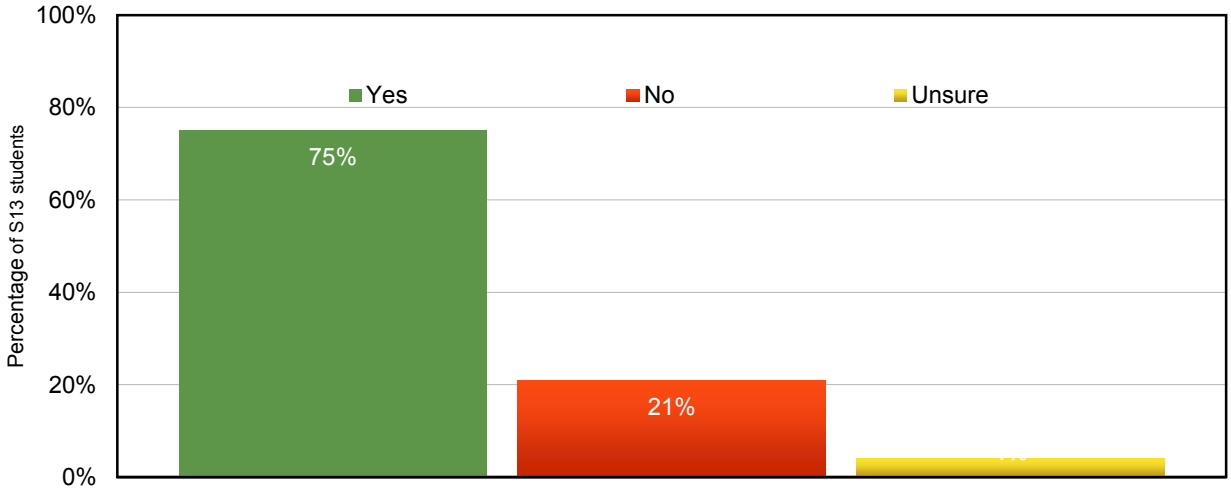

Figure 13. Are you accessing the course at your preferred academic level?

Students (S13, 27/8/2013 cohort, n=56):

P.11: 'I wanted to do this at master's, but couldn't because there was no one to assess me at this level [proficient] *in practice.'*
P.17. 'Master's would be ideal; however, my PBE said "no".'
B: 'I didn't realise you can do it at master's for people who have already got their degree.'
A: 'I did ask about the master's, but because I have only been there a year and a half they [the PBE] *wouldn't let me'* (S12, FG, 29/8/13, Q.5).

PBEs (22/8/2013, FG2):

B: 'It's a great idea if we get everyone to degree level…but some will not achieve that.'
C: 'This course is better, more robust than the old CCP [non-academic]*.'*
J: 'Two [students] *were aggrieved they have not had the opportunity to study at masters.'*
G: 'I think we need to look at that. It doesn't seem right that they can't do master's.'

Learning / outcome

- 21% of S13 students accessed at degree level, rather than their preferred master's level.
- This contrasted with the positive tone set by the lead nurses, university link lecturers and managers. In the S13 cohort, 70% were diploma students moving to degree level study, with only 3/56 accessing at master's level. This was a changing demographic, with increasing numbers of students aspiring towards a masters' education.
- It was significant that students from two separate student cohorts reported it was the PBEs who were acting as the gate keeper, rather than their line manager, who effectively blocked their master's level access. This generated ongoing discussion over how we should assess the academic ability of students and control access to master's level study; an area that was important to both the students involved and their workplace.

Actions / what did we want to learn?

- Agreed the need to reduce barriers to master's PBEs entry, whilst safeguarding academic standards and course performance indicators.
- A writing skills assessment was added to the admission process to standardise the assessment of student academic ability and support a fair admissions process (started with F14 intake).
- Continue to monitor the uptake at master's level.

Q.5. What knowledge and skills did students expect to develop?

This open question surveyed new starter expectations, allowing comparison to the experience of students completing the CCP. PBEs and lead nurses were asked the same question.

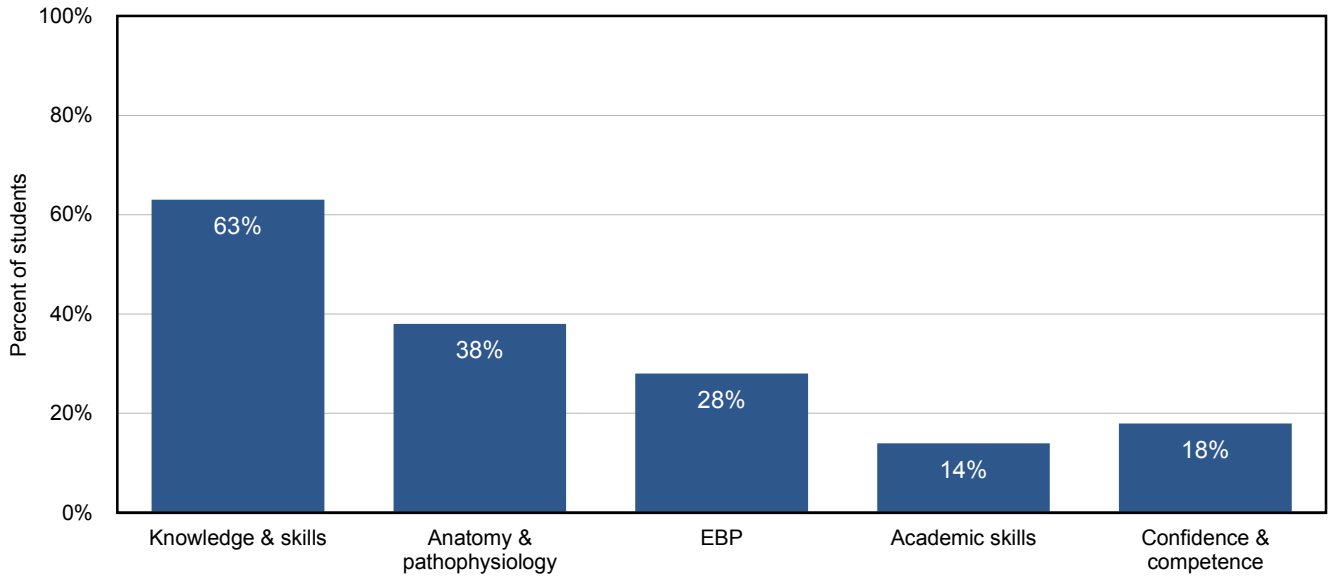

Figure 14. S13 students: key themes

Students (S13, 27/8/2013) Comments from questionnaire and focus group:

'Learn in depth anatomy and physiology (A&P) behind acute conditions which I can relate to my everyday practice.' (p.14)
'To build upon knowledge…to deliver more safe and effective care.' (p.35)

'To know the care you are providing for your patients is evidence-based (J, Q.2, S13 FG, 27/8/2013)*; 'evidence-based approach'* (p.3, 4, 18, 26, 31, 36, 45)*;*
"up-to-date theoretical knowledge…ability to analyse and criticise';

'Develop knowledge that will support my decision-making in practice' (p.17, 18, 23, 24, 36), [will be] *'able to challenge / improve care'* (p.22, 30, 31).

PBEs (22/8/2013):

D: 'They want to develop skills to be confident and competent in the workplace.'

F: 'When you understand the A&P and how it's affected by the disease processes, you can understand why you are doing the things you are doing in practice.'

D: 'They can begin to question their own practices and realise sometimes it is not black and white. And to have the confidence that they can make changes…Students are encouraged to question their practice…to critically analyse, look for differences in policies and protocols between trusts (FG1).*'*

H: 'Learning that there are different ways that are equally evidence-based and equally effective …allows the more expansive thinking' (FG2).

Moderator summation (FG2)*: 'PE felt the nurse's role was not sufficiently linked to patient care and needed developing.'*

Lead nurses (6/12/2013):

A7: 'You have got to be a lot more politically astute as well, even as a staff nurse.'

X: 'Values and behaviour is fundamental to everything, and there should be a big emphasis on that.'

A2: 'You could even go a step further, to add financial awareness. You want someone technically skilled, then you need to incorporate in their values and behaviour as well. These are the staff of the future.'

Z: 'They really do struggle around that role of the nurse.'

A3: 'Embedding the 6Cs, as much as we may think it's obvious, would be good that it is profiled throughout the course.'

Moderator: 'When reading the essays that there is no mention of relatives.'

A2: 'It is really important, and we are going to see patients and relatives on the clinical effectiveness groups, it is really important.'

X: 'What is really good is that they will come back and say we don't do that, and we are supposed to be doing this' [consensual agreement].

A3: 'Everyone wants the rationale for making any changes. So it's great to have evidence-based practice, as they can rationalise something.'

Learning / outcomes

- Students expected to learn the evidence base underpinning their clinical practice; in-depth knowledge of A&P and pathophysiology, which underpin decision making.
- Lead nurses valued the development of *higher order thinking skills* in developing future practitioners aware of the wider contemporary economic and political issues impacting on critical care delivery, which was not in the curriculum.
- PBEs and lead nurses identified that professional issues including attitude, behaviour and the role of the nurse were key learning expectations, which were missing from the curriculum.

Actions / what did we want to learn?

- Continue classroom observations to assess alignment to these learning outcomes.
- Consider benefits of introducing pre-course A&P workbooks.

Q.6. What knowledge and skills did students gain from undertaking the CCP?

Students (S12, 29 & 30/8/2013):

Clinical *confidence* (n=8); *A&P* (n=6); *evidence-based practice* (n=3), legal issues (n=2), critical analysis (n=1)

A: *'The anatomy and physiology section was good'* (FG, 30/8/2013).
B: *'Felt like it* [A&P] *was brushed over a little bit really'* (FG, 29/8/2013).
M: 'Over the whole course there wasn't a lot on A&P' (FG, 29/8/2013).
A: 'Practice between different units… to discuss what goes on elsewhere.'
M: 'Knowledge really, the evidence underpinning of what you are doing in ICU' (FG, 29/8/2013).
'Not studied for 20 years plus – enjoyed the essay / putting it all together' (p.11).

Learning / outcomes

- Clinical *confidence, A&P and EBP* were highlighted as key themes.
- Mixed views on whether the A&P was sufficiently complex and applied for a CCP.
- Peer learning from students on other units was recognised as a key attribute of the CCP.

Actions / what did we want to learn?

- Continue classroom observations.
- Repeat question in second research cycle.

Q.7. Did students value the academic study involved in this course and how did they think it contributed to the development of critical care nurses?

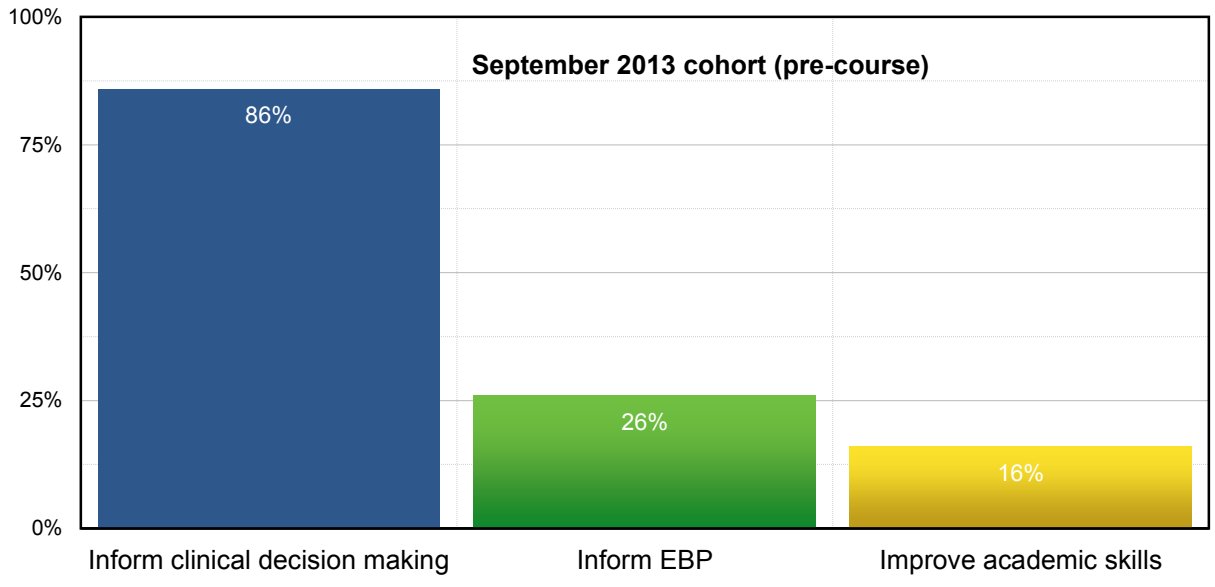

Figure 15. What did students see as the value of academic study in the course?

Students (S13, 27/8/2013):

Only 2% perceived no value (a black cloud over my head) (n=1), No response (n=3)

'Confidence of best practice' 'it will help with delivering EBP' (p.42)

'Become more confident in my clinical decision making' (p.36).

T: 'Academic work gives you insight.'

R: 'It gets you into the habit of not taking things at face value…' (S13, FG).

T2: *'Updating your knowledge, improving competence…becoming more confident.'*

Views of the other stakeholders

PBEs (22/8/2013, FG1):

G: 'It brings the ability to critically analyse a piece of research...by looking at the evidence and deciding its value…they're able to examine their practice.'

B: 'It gives them the evidence and the knowledge they need to challenge practice...rather than saying I don't agree, now you can put your argument, your rationale for why you don't agree…You have the tools to challenge members of the multidisciplinary team …you can have a better conversation.'

Moderator: 'So does academia bring that then?'

C: 'They can then go on to…applying those skills and producing policies protocols, changing practice based upon the evidence that they are then able to analyse.'

D: 'That goes back to promoting changing practice doesn't it?'

F: 'You get credibility from it [professional]*. Some of the students may need credits and some of them may not, but they still get that credibility.'*

L: 'Too much emphasis on the academic side.'

Managers (19/9/13):

E: 'It is not just about keeping up with colleagues, it is actually about changing our profession [nursing] *and moving it further forward, in terms of the way we deliver care and, not just critical care but the way we deliver the whole of the spectrum of nursing care.'*

Learning / outcomes

- The responses from nearly all key stakeholders provided a resounding endorsement of the contribution of the academic component, linking it strongly to improving or challenging established practice, and the development of transferrable skills.
- *EBP*, *clinical decision making* and *confidence* were prominent attributes associated with academic study.
- The curriculum content and delivery needed to reflect these key themes.

Actions / what did we want to learn?

- Continue to observe study days to evaluate current provision.

Q.8. Did classroom teaching support students to achieve their learning needs?

Students S12 (post course, 29/8/2013):

R: 'Case studies – that develops your skills…We did a lot of group work, presenting things back and they did help us.'
S: 'You do case studies and you can relate it to your work environment, which was good.'
O: 'The case studies were the best part of the study days…For the actual assignment, there was an hour at the end of a day once. So there's not a great deal.'
A: 'It was quite limited really (assignment support). We only had an hour and sometimes you can't grasp exactly what they want really' (FG).

'Working in a team – to determine answers to questions- other people's view points' (p.2).
'Ideas could be explored with class members' (p.9).
'listening to other peoples' opinions' (p.8).

Learning / outcome.

- *Case studies* and *peer-to-peer learning* were identified by students as useful in helping them to link theory directly to their nursing care, which links closely to the student's academic assignment.
- There was insufficient support with the academic assignment during the study days.

Actions / what did we want to learn?

- PBEs to consider how to increase focus on the *role of the nurse* within study days.
- Research the evidence base for expanding the use of *case histories*.
- Continue classroom observations to evaluate curriculum alignment.

Q.9. Is the CCP developing good critical care nurses who are fit to practise?

This question was repeated throughout the study to determine the impact of interventions.

Students (S12 post course):

82% (n=19) reported that the course had made them a 'better' critical care nurse
1 suggested it had, 1 reported increased confidence, 1 did not respond.

'Yes. Better at seeking EBP to help improve work' (p.5).
'Yes- interesting to see other units' practice' (p.8).

O: '*Yes' in terms of the theory side…the competency booklet was not taken seriously by the staff who were assessing us'* (FG, 29/8/2012).

PBEs (22/8/2013):

G: 'I do. But we need to look more at the actual competencies and their assessment.

…The weakest link is the competency assessment' [general agreement] (FG1).

H: 'We don't teach kindness and compassion.'

Moderator: 'So what aren't they getting?'

H: 'Professionalism.'

B: 'There is not enough of that anywhere really at the moment.'

Moderator: 'And when you use the term professionalism, what are you talking about?'

J: 'Courtesy, values, attitudes and behaviour towards other people.'

B: 'The caring aspects of nursing' (FG 2).

Lead nurses (6/12/2013):

A2: 'Yes I do, definitely' [developing nurses who are fit to practice] [group agreement].

A7: 'The course is much better than it was and that is evolving all the time.'

Managers and university link lecturer (31/10/2013):

V: 'Not all the educators engage in the academic side, and I am not convinced that the competency assessment is robust.'

W: 'You have a fragmented approach to it, rather than a shared philosophy…If this study achieves holism in terms of a shared philosophy, and that will be massively important.'

Learning / outcomes

- Student feedback was positive but expected, as they should be better critical care nurses after studying the speciality for a year.
- *EBP* and *peer-to-peer learning* consistently identified as key themes.
- Concern that the CCP was not sufficiently teaching core professional nursing values.
- The clinical competencies were identified as the weakest link by educators and students.

Actions / what did we want to learn?

- Embed professional nursing values into the curriculum.
- NEW QUESTION to be added to the second research cycle to investigate concerns relating to the quality of the assessment of clinical competence and its potential impact on students' *confidence* and *clinical competence*.

Q.10. Were there any areas of learning where students required particular support?

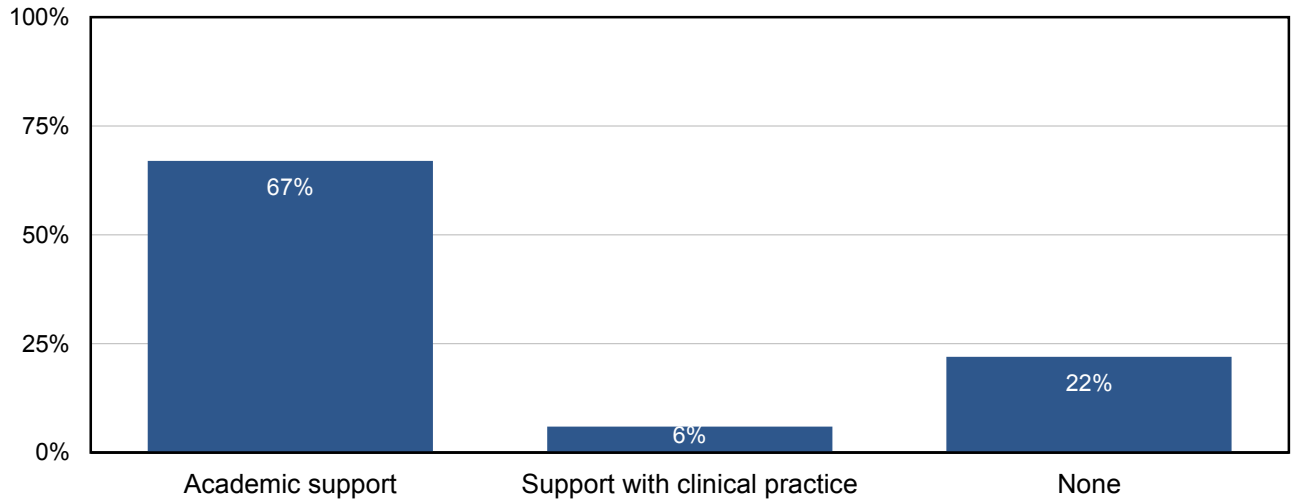

Figure 16. Specific learning support areas identified by students on induction

Students (S13, 27/8/2013):

- *Academic support* (n=38), including students' academic writing (n=16), referencing (n=9), critical analysis (n=4), literature searching (n=4), PowerPoint, e-learning (n=5).
- *Support in practice* (n=3) (more time to sign off competencies), *None* (n=11)
- No Response (n=6)

Learning / outcome

- Academic support was the primary learning need for the majority of students because it is something they are not regularly undertaking and may have not done so for many years. The level of academic support provided with the CCP did not reflect his.

Actions

- Continue one-to-one academic tutor support for students.
- Raise awareness with PBEs of the shared responsibility to meet this learning need and explore ways of providing greater opportunities for academic learning in the study days.

Q.11. Are there any changes you feel would improve the experience of students undertaking the CCP? (S12 Post-course students)

Generally the feedback was positive (n=14). The few critical comments identified pathophysiology and the need for greater student participation rather than lectures) (p.8).

Key performance indicators: academic performance remained unchanged

- **Acute Care Unit:** February 2013 cohort: 24% referred on first attempt
- **Critical Care Unit:** September 2012 cohort: 20% referred on first attempt

Classroom observations

The first set of observations were completed in February 2014 and therefore the findings are presented in the second action research cycle.

Discussion and learning: end of cycle 1

The insights generated from this action research cycle identified the absence of a shared vision for the CCP. The outcome of discussions was collective agreement as to the purpose of the CCP, which provided a shared understanding of the characteristics of the key educational outcomes we were trying to achieve. Listening to all the key stakeholders, particularly the lead nurses was enlightening. The students' positivity to undertake the course and sense of vocation to learn how to deliver better patient care challenged the negative assumptions about the students' motivations that some of the PBEs held. For example, the students and lead nurses were notably more supportive of the academic component, linking it strongly to improving and challenging established practice, alongside the development of transferrable skills. This highlighted the case for strengthening the academic content and amount of student support available within the programme.

Managers regarded the CCP as 'mandatory' for all nurses entering the critical care workforce and this expectation was common to all critical care units in Greater Manchester. The concerns expressed by some of the PBEs regarding the potential deleterious impact of this mandatory expectation on student motivation were misplaced given the level of positivity amongst students. Students' primary reported driver was unambiguously to learn how to improve the quality of their clinical practice, which provided a refreshing tonic, allowing the PBEs and managers to view the students more positively. The universal agreement amongst lead nurses that the CCP was now the benchmark national critical care qualification, seemed to remind or enlighten them to this development and effectively stopped it from being used as a foundation novice level course. This led to more experienced cohorts, which eventually raised the technical level of the programme.

Several aspects of academic provision were noted as problematic. Firstly, the changing student demographic, with 30% already graduates; and the 21% denied entry to master's study without formal assessment of their academic ability was a source of considerable student frustration, which it was hoped writing assessment would address. Further, 70% of students were clear that academic support was their primary area with which they required support and this needed addressing. Finally, clear themes emerged, including the importance student attributed to understanding the pathophysiology of critical illness; the role of *evidence-based theory* for informing *clinical decision making, nursing care* and to the expectation that by learning these things they would increase their *confidence* in clinical practice. All were key areas of curriculum development that needed further consideration.

Research Cycle 2 (January–July, 2014): Results and Findings

Results from the first set of classroom observations (n=12)

The classroom observations were performed to provide a snapshot of what was really going on within the classroom. The observations evaluated the teaching methods and content rather than individual teacher performance. We sought to establish whether the classroom experience was providing students with a sufficient quality of higher education to support the learning outcomes of a graduate / master's level programme. A key consideration was achieving the right balance between supporting intellectual development, alongside clinical knowledge and skills. We hypothesised the curriculum was insufficiently orientated towards higher education, partly because the clinical and academic components were viewed and taught by the PBEs as distinct entities. This section presents the results from the first set of classroom observations performed over the 12-month period from September 2013 to July 2014. The acute care unit (ACU) was observed first, followed by the critical care unit (CCU), in the chronological order they are attended by students. The data represents our

perspective midpoint in the study, which informed much of our thinking in re-modelling the curriculum. It provides a comparative baseline, from which we evaluated the effectiveness of our actions during the second set of classroom observations.

Findings

The results are presented in figure 17 below. The data records how *evident* the 10 core curriculum themes were during the study days. These core themes were derived from the CCP learning outcomes and are set across the base of the table. The extent to which the themes were evident within each study day was evaluated and then a mean rating score calculated for each theme across the six study days in each unit (ACU and CCU). The scale in axis Y ranges from a maximum score of three, indicating the theme was 'highly evident', such as 2.7 for learner engagement in both units; two indicates it was 'evident' (present though not strong) such as the 'role of the nurse' in ACU; one or below is classified as 'partial' meaning weak, as in the case of consideration of 'relatives'; zero means it was absent.

Evidence derived from the observer was fed back to educators after each study day (Appendix 4 provides an example of a classroom observation from this initial set of classroom observations, with Appendix 5 showing the outcome when this observation was repeated 12 months later). The results for each theme are presented below, converged with educator and student comments derived from the questionnaires or focus groups to balance the statistical data and illustrate how these contributed to the formation of local knowledge. The excerpts are extracted from the 'summaries of evidence' (Appendix 7), which were shared with the key stakeholders at the end of each research cycle.

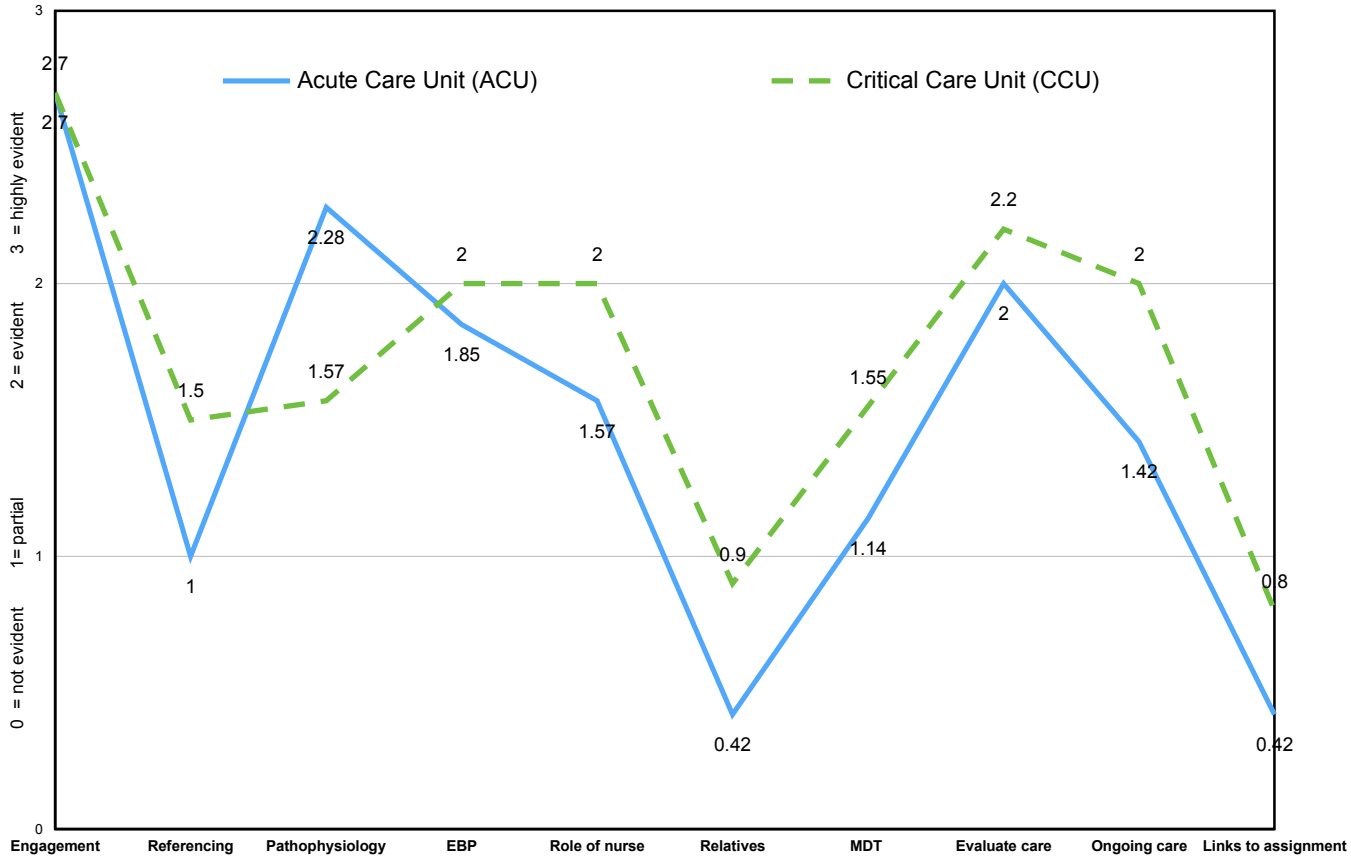

Figure 17. Curriculum alignment: first set of classroom observations

Alignment to core curriculum themes

1. ***Engagement (2.7).*** The high score reflects the clinical expertise and credibility of the educators. Despite group sizes of 7–16 students, teaching was dominated by lectures, with quizzes and discussion points keeping the learners engaged. Students were generally passive, and expressed fatigue with lectures. There were good examples of critical discussion, including using case studies to facilitate peer-to-peer learning. The case studies were short, medically orientated and peripheral, rather than central pillars of the teaching philosophy. Students frequently expressed a desire for a more active role.

***Observer feedback**:*

'Highly relevant case study discussion and reflection in the afternoon linked theory to practice… strongly credible and knowledgeable tutors' (Respiratory 1, 3/9/2013).

'Teacher-led, didactic style. Students were engaged 15 mins at the end to consider investigations and nursing care…the needs of the students were unknown' (GI day, 7/1/2014)

'Students split into small groups and asked to feedback on what they know about different analgesia. Worked very well, students highly engaged and participative' (Pain, 25/2/2014).

Students' comments:

'They'll split you up into groups, you do case studies and you can relate it to your work, which was good. So it's not all just sat watching a PowerPoint. A bit of interaction is good for me' ('S', S12, 29/8/2013, p.8).

'Some days were a waste of time, overly repetitive and did not vary the learning style' (F13, p.17).

F13 students (n=23/28) were asked *'To what extent did the content of the study days support you to achieve your academic and practice-based learning needs?*'

Comments (n=16), positive (n=10), neutral (n=2), negative (n=4) were related to a didactic teaching style, lack of EBP and a lack of depth in the course.

Outcome / actions:

The educators' enthusiasm for sharing their expertise was highly evident. While the level of engagement was good, the teaching pedagogy was not addressing adult higher education learning needs. The following actions were agreed:

- Curriculum Working Group to explore how case studies, critical discussion or simulation could be used to facilitate a more constructivist student-centred learning pedagogy.

2. *Referencing / evidence-based practice* are similar themes, so feedback is combined. Teaching materials lacked contemporary evidence base, with referencing scant, which is substandard for higher education. The classroom experience contrasted with students' expectations and the requirements of National Standards for Critical Care Nurse Education (CC3N, 2011) for the application of evidence-based practice.

There was some good critical discussion, with students from different critical care units comparing practices, but this lacked critical consideration of the *evidence base*. The use of *case studies* to provide opportunities for students to link evidence-based theory (EBT) to nursing practice, including *decision making* emerged as themes from several sources: classroom observations feedback, the educators and student feedback.

Observer feedback:
'Harvard referencing not evident' (Respiratory 1, 3/9/2013)*; 'Delirium and psychological care –no evidence-base'* (Neuro, 25/2/2014)*; 'referred to articles they could read, but need to add these to slides, as this shows students where this information has come from and provides a model for… their presentations'* (Pain, 25/2/2014); *'EBP is required to underpin practice…is one pain tool better than another?* (Pain, 25/2/2014).

'Used a case study to discuss issues – linked well to critical thinking and some of the demands of the assignment. Evidence base underpinning care was discussed well' (CVS1, 5/11/2013).

'Use fewer [case studies]*, consider providing more patient information discussing the evidence base underpinning some of these decisions to allow "deeper" more expansive study of the topic in a way that supports practice development'* (Respiratory 2, 22/10/2014).

Educator comments on feedback:

'Like the use of holistic wider nursing aspects of a case study. One patient for acute chest pain and then a second for fluids and CVP (CVS1, 5/11/2013)

'Agree with points. Day feels crammed. Could give out case studies for PBL between study days to consider A&P, interventions and consider evidence base, which will help them prepare (Respiratory 2, 22/10/2014)

F14 pre-course and S13 post-course feedback strongly linked learning and applying theory to practice: EBP was identified as important by 28% (n=12) F14 cohort, consistent with the 26% from S13.

Students expect the CCP to provide them with a *'sound evidence base to challenge practice'* (p.22)*, 'Develop knowledge that will support my decision making in practice'* (p.18, 23, 24, 35).

'It would be good doing case scenarios, it makes you think about it, getting x-rays, and makes you think about the big picture and what's going on with your patient' (A12, F13, post course FG, 23/1/2014)

Outcome / actions

The following were identified as requiring further investigation / intervention:

- The CCP required underpinning with a robust, fully referenced *evidence base*.
- Better student support in developing and applying their *critical thinking and clinical decision making skills.* How could we modify teaching to support students to develop these key transferrable skills?
- Does educational theory support the use of longer, complex *case studies* and how could these be used to deliver teaching that will meet the learning needs identified above? (See literature review following action research cycle 2 findings.)

3. *Pathophysiology*. There was minimal focus on altered physiology. An hour of each study day was spent revisiting normal physiology. This time needed to focus on *disordered physiology* linked to the presenting *signs and symptoms* in critical illness. These were both assignment requirements, and this represented poor curriculum alignment.

Observer feedback:

'A&P is related well to normal physiology…but discussion of the common respiratory illnesses is minimal' (Respiratory 1, 3/9/2013).

Emphasise how the pathophysiology links to patients' signs & symptoms – links to demands of assignment' (Neuro, 25/2/2014).

'In-depth normal and disordered pathophysiology, with some links to how these present as clinical signs and symptoms. Suggestion: Link the changes in A&P such as vasoconstriction, catecholamine much more to a patient's signs and symptoms (CVS 3, 22/4/2014).

'This day covered applied normal and altered CVS [cardiovascular] *physiology, related very well to signs and symptoms, links well to both patients and the assignment'* (CVS1, 5/11/2013).

Educator comments:

'Comments were helpful and liked the suggestions above…could link case studies to several common respiratory conditions, their pathophysiology and nursing care' (Respiratory 1, 13/9/2013)

Students in F14 identified learning A&P 35% (n=15) and pathophysiology 26% (n=11) as key area of learning:

A&P formative workbooks suggested by several students: '*Mandatory workbooks…as pre-course reading = less repetition within classes*' (F13, p.5); '*prefer more workbooks and finding my answers'* (S12, qp.1).

Outcome / actions:

The Curriculum Working Group agreed the following actions:

- Overt links to be made between the disordered physiology and patients' presenting signs and symptoms, linked to nursing observations / care management.
- Student suggestion of formative A&P workbooks pre-course to free up time on the study days for disordered physiology was actioned.

4. ***Role of the nurse, relatives or the multidisciplinary team.*** The paucity of consideration given to these issues was a surprising and significant finding given these are core nursing activities, particularly within critical care, and central to the assignments. The evidence supporting this finding was derived initially from focus groups with educators at the start of the study, but were most were striking during the classroom observations.

Observer feedback:

'*Role of the nurse and other members of the multidisciplinary team briefly mentioned. No mention of relatives; a major part of the assignments. Could easily be developed during the case studies'* (Respiratory 1, 3/9/2013);
'involve the multidisciplinary team and relatives in scenarios and get students to think critically about their role' (Respiratory 2, 22/10/2014).

'Little discussion relating to role of the nurse, relatives or multidisciplinary team…A case study may allow a more cohesive discussion of myocardial ischaemia, including nursing role, to assess, plan and evaluate ongoing care including relatives and multidisciplinary team (CVS 1, 5/11/2013).

Educator comments on feedback:

'Like the use of holistic wider nursing aspects of case study –needs to be one for acute care and critical care' (CVS 1, 5/11/2013).
Educators were receptive, adding that they could '*link case studies to several common respiratory conditions, their pathophysiology and nursing care. Add F for family to the end of the A–E primary assessment'* (Respiratory 1, 3/9/2013).

Outcome / actions

The role of the nurse within critical care was recognised as complex and difficult to articulate. The critical care nurse role involves high levels of medically orientated technical knowledge and observational skills, but this should not override core professional nursing issues. The Curriculum Working Group recognised this, and agreed to explore how case studies might 'build in' the role of the nurse, working within the multidisciplinary team when caring for patients and their relatives.

5. ***Evaluation of care*** was evident, with students reflecting on their experiences within practice. The study days provided the opportunity for students from different critical care units to learn from peers. The wide range of critical care experience amongst the students was obvious, with relative novices less confident and having less to contribute than their experienced colleagues. Care delivery was evaluated in the short term, rather than longer term rehabilitation needs.

Observer feedback:
'Consequences of pain – evidence presented to indicate it impedes [ongoing] *recovery – supports EBP and critical thinking processes related to their assignment and facilitates higher levels of thinking, clinical decision making and use of clinical judgement'* (Pain, 25/2/2014).

Outcome / actions

- The classroom observations identified consideration of long-term patient care.
- Rehabilitation required strengthening to reflect contemporary practice.

6. *Links to the academic assignments*. Very little time within the study days was devoted to supporting students with assignments. This absence suggested educators viewed supporting students' academic development as an issue distinct from their role.

58% of F14 and 71% of S13 students identified their primary learning need as support with their academic studies. This contrasted with the paucity of tutor attention to this issue during the study days: *'For the actual assignment, there was an hour at the end of a day <u>once</u>'* (Post course S12, 29/8/2013, q.8. p.7).

Outcome / actions

- There was evidence of cultural lag[9] as the MCCC continued to transition from a training provider to a provider of higher education. This lag existed in custom and practice. There remained a reticence by most of the educators to move from current practices to dedicating further classroom time and resources to supporting students' academic development. The transition to becoming a higher education provider is complex and far greater than simply writing and validating an academic programme. The extent of this void had not been appreciated by myself or others leading this programme. The PBEs needed to engage

[9] **Cultural lag** definition: the difference in the rate of change between two parts of a culture (Collins dictionary, 2017).

with and recognise they were out of touch with their students' learning needs for the educational ecology of the MCCC to evolve. The process for achieving this transition was the action research process itself, with the insights and momentum it created.

- A 33% ACU referral rate in April 2014, combined with the above findings, raised anxieties that this was a failing programme, further legitimising the findings and creating a sense of urgency to provide additional academic support.
- The Programme Committee agreed to introduce formative assignments in September 2014. These provided students with a stepped structure to their academic development, along with timetabled tutorial support. This embedded academic support within the scheduled study days, rather than asking students to attend in their own time.

Progress towards curriculum alignment

The level of curriculum alignment was strikingly similar in both units (see figure 17), which was unsurprising given they were developed and delivered by the same team. There were few areas of significant divergence, other than the CCU study day materials became slightly better referenced by the time we observed them. Figure 18 below illustrates the lack of consistent linear progression towards curriculum alignment during the first set of classroom observations (12-month period). The R^2 demonstrates that the two thirds of the variability could have been chance, with little firm evidence that the curriculum was being realigned.

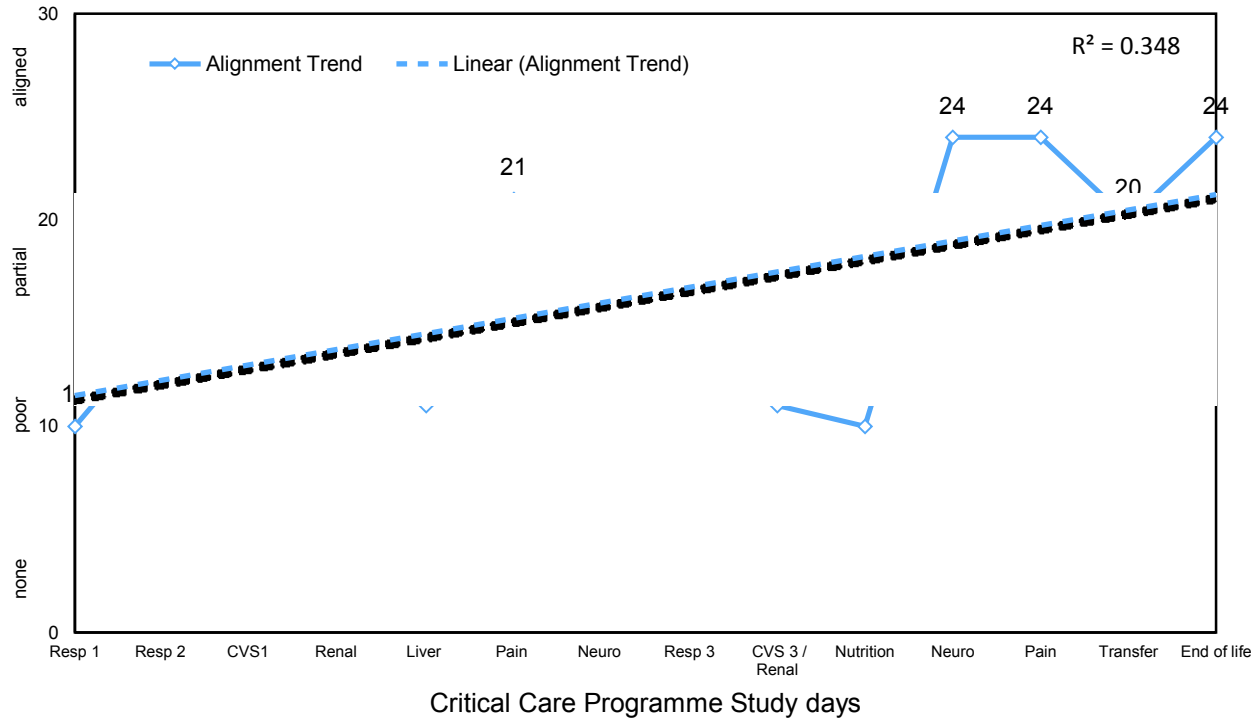

Figure 18. First observation of CCP study days (September 2013 – July 2014)

The study days are in chronological order, with scores of 0–3 awarded for each of the 10 themes. This created a maximum score of 30 indicating the study day was fully aligned, a score of less than 15 means half or partial alignment and less than this indicates poor alignment. The data demonstrates the CCP was initially poorly or only partially aligned to the curriculum learning outcomes. Improvement was slow, with significant improvement only consistently evident by June 2014, when scores became consistently 20 plus. The lack of progression during the first nine months reflected the nature of participatory action research, where change can be slow or may not occur at all, with many educators reluctant to change either materials or teaching behaviour.

Summary of findings from classroom observations

Observing the study days in sequence provided a unique insight, an overview of the CCP that had not previously existed. This new perspective revealed the educational challenges extended beyond anticipated pedagogical issues relating to teaching style and the need to improve referencing. There were deeper issues involving the relationship of the CCP with contemporary healthcare practice and the expectations of graduate /master's students. These included the importance of evidence-based practice in contemporary healthcare and the need to better consider the professional caring role of nursing within critical care. It was also evident that combining the needs of acute care nurses within a critical care programme was problematic. The two groups are distinct and as a result the flow and content of the programme was repetitive and limited, with little time available to consider the issues such as rehabilitation, political and financial pressures, or supporting students' academic development.

At this stage in the study, many of the educators remained defensive about changing 'their' programme, tolerating, rather than embracing, the classroom observations. It was difficult to be confident the research would achieve significant lasting improvements. The experience was highlighting the tensions that can arise when conducting classroom observations within a participatory action research framework, given its emphasis on democratic change.

Results: focus groups and questionnaires.

Population: F14 students (n=43/43) commencing and F13 completing the CCP (n=29/34; 23 questionnaires, FG of 6 students) = 85% F13 population. Date: January 2014.

Focus groups were not performed with F14 as none of the changes to curriculum impacted on them, other than the introduction of the pre-course writing assessment. Focus groups would only be performed if considered necessary by the working group.

Q.1. What motivates the students to attend the CCP?

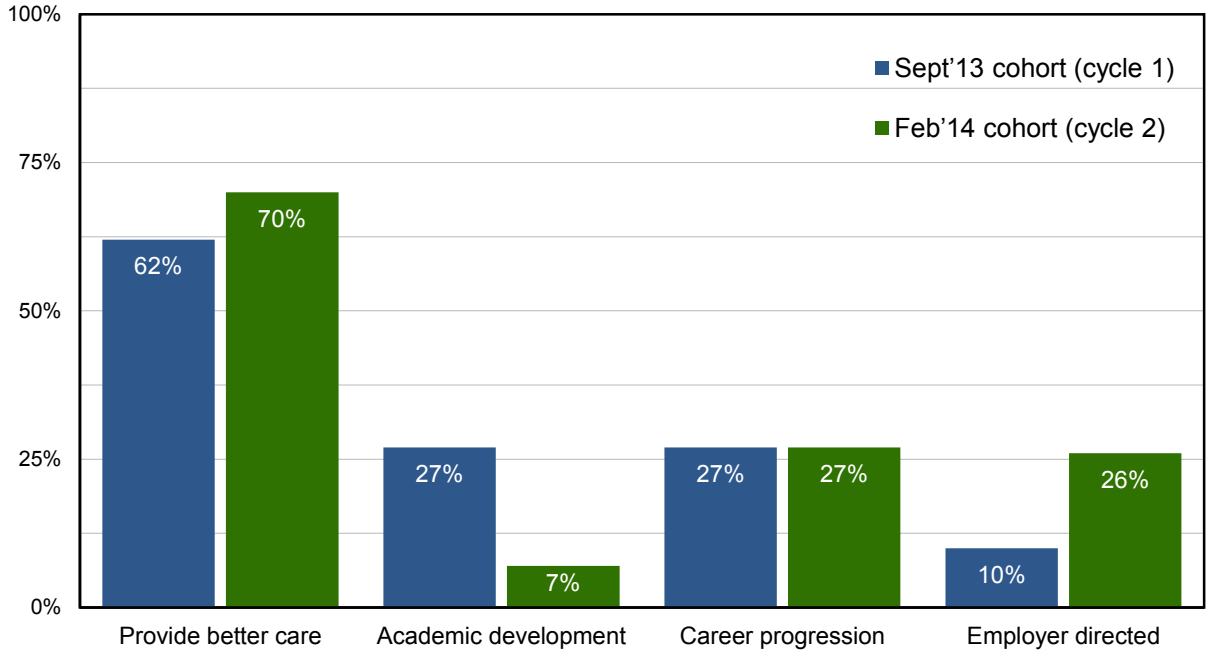

Figure 19. Thematic comparison between Action research cycle 1 & 2

Student comments:

'I wanted to improve the quality of the care I provide…also continue my academic learning and advance my career' (F14, p.23).

'Felt it would help me become a better critical care nurse' (F14, p.33).

'Sent from work' (F14, p.1, 2, 3, 14, 20), *'it's mandatory'* (F14, p.9, 5, 17, 18).

Learning / outcomes

Results confirmed students' primary motivation was to increase their knowledge and skills in order to provide improved patient care. It was clear that attendance was employer directed for a significant number of students. We felt this number would reduce when the requirement for greater critical care experience began with S14, because these students would be more settled within this environment.

Actions / what did we want to learn?

- What was the optimal period of pre-course critical care experience?
- Would student motivation levels increase as we tightened the CCP entry criteria?
- If students were 'sent', would they have chosen to attend if given the choice?
- Feedback results to lead nurse representation at Programme Committee.

Q.2a. NEW QUESTION. How long have you worked within critical care?

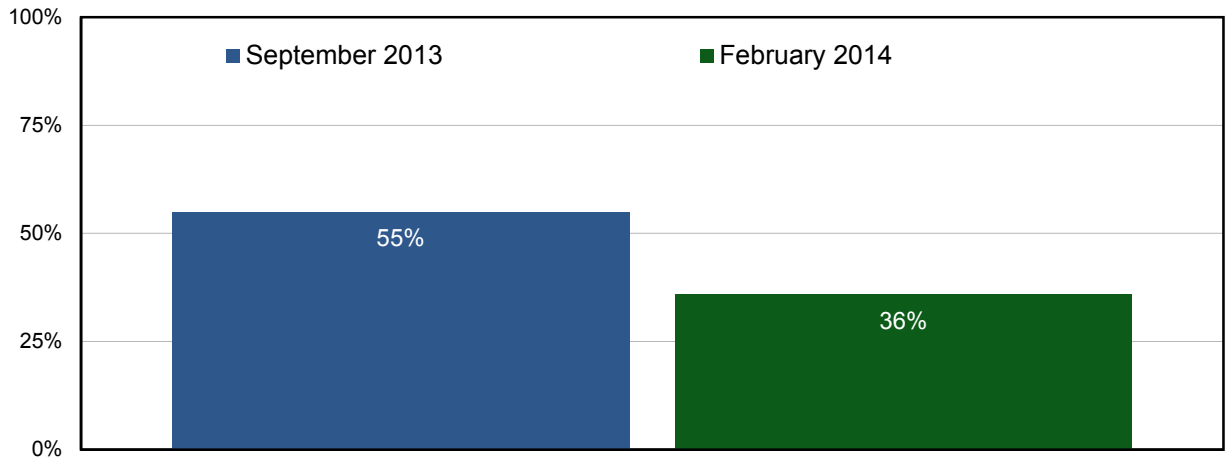

Figure 20. Percentage of students with less than 12 months' ICU experience starting the CCP

Q.2b What did students feel was the optimal period of critical care experience prior to starting the CCP?

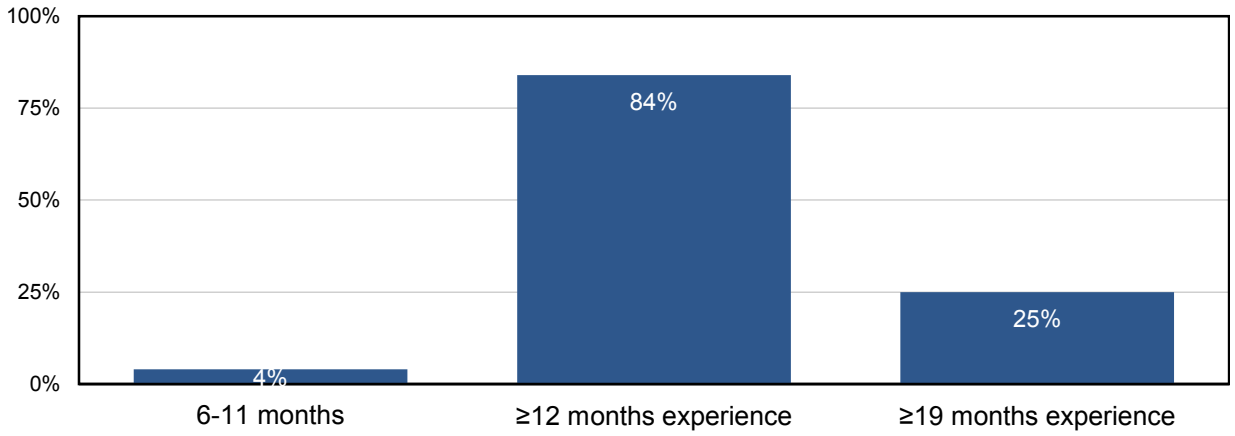

Figure 21. What is the optimal period of pre-course critical care experience? (open question)

Learning / outcomes

The results in figure 21 demonstrated that critical care units were continuing to send a significant number of nurses (36%) with less than 12 months' experience within this environment. Some units were still using the CCP as an induction programme. This contrasted strongly with the views of the F14 students, who overwhelmingly supported the need for at least 12 months' pre-course critical care experience, with 25% favouring a period greater than 19 months.

Actions / what did we want to learn?

- Students endorsed the need for at least 12 months' pre-course critical care experience.
- A change to entry criteria was required to effect this change. A minor modification introduced a minimum 12-month critical care experience commencing from the September 2014 cohort (source: CIP, May 2014).

- Evaluate the effectiveness and impact of this intervention in achieving more experienced and knowledgeable students.

Q.3. Were the students aware of the National Standards for Critical Care Nurse Education (CC3N, 2011)?

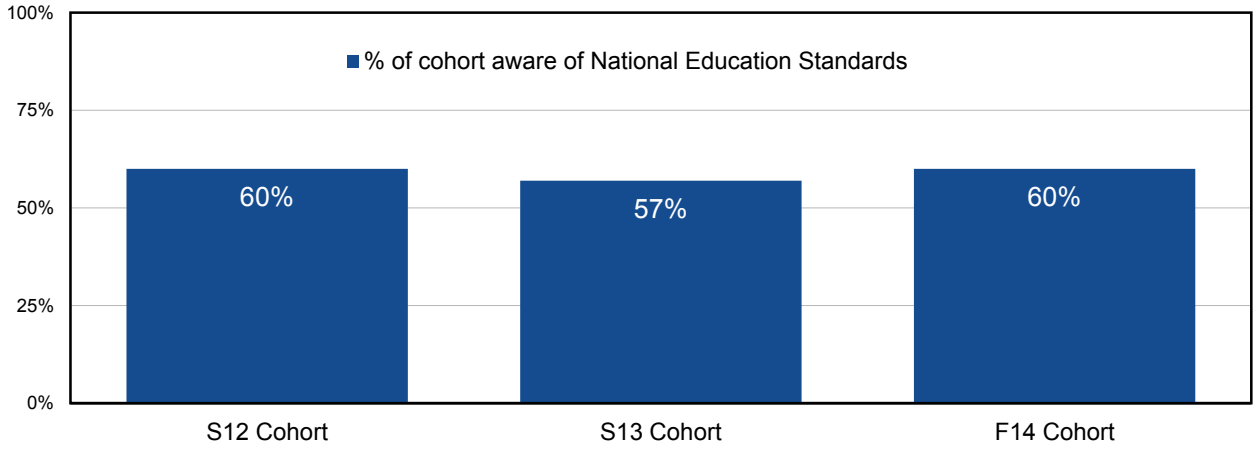

Figure 22. Student awareness of the National Education Standards

Student comments:

79% F14 strongly in favour of the national standards, citing benefits of academia (n=16) and transferability (n=12).

'*This is an appropriate standard…it will improve the quality of care provided in practice. Staff will be better able to support their decision making*' (p.23).

Negative comment x 1: *'may exclude some nurses who are excellent in practice but not academic'* (p.10).

Learning / outcomes

40% of students continue to be unaware the CCP is aligned to national standards. The vast majority support the standards because they recognise their value in terms of academic advancement and as a nationally transferable critical care qualification.

Actions / what did we want to learn?

The PBEs continue to raise awareness of these national standards locally. Details of the National Standards are included in pre-course induction. Evaluate in September 2014.

Q.4. Were students accessing the CCP at their preferred academic level?

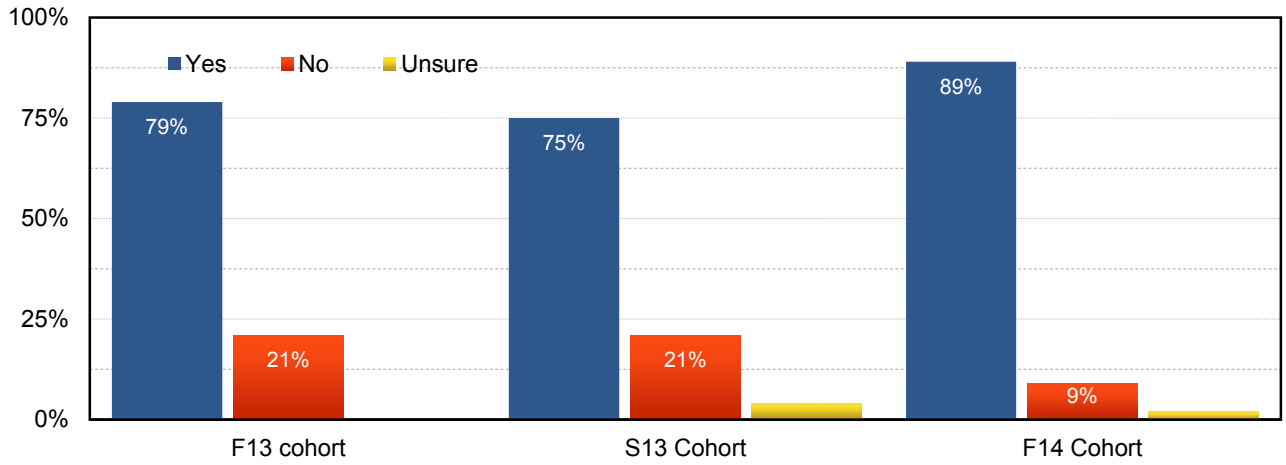

Figure 23. Did you access the CCP at your preferred academic level?

Student comments:

A11: 'I have already got my degree. I should be doing it at master's and found it really frustrating…it's because I didn't have any critical care experience' (F13 FG, 23/1/2014).

'Our trust only allowed us to study at level 6. I already have a degree; I would have liked to have done master's'.

'Master's would be ideal, however my PBE said "no"' (F14, p.3).

'On the writing assessment day I was told I could only do degree level. I have 2 degrees…one a first. I don't think the day tests your writing skills' (F14, p.1).

NB significant increase in master's level students:

Sept 12 = 1, Feb 13 = 3, Sept 13 = 3, F14 = 10.

Learning /outcomes

Some improvement was noted since the introduction of the writing assessment day, with 89% of students satisfied that they were accessing the course at their chosen academic level. The number of dissatisfied students reduced by more than 50%, which was a significant improvement, especially given the sharp increase in the number accessing at master's level. Access to master's level education remained a frustration for nearly 10% of students, and concern remained over the fairness of this process. Improving this admission process was important for these students and developing a positive aspirational educational ethos within the MCCC.

Actions / what did we want to learn?

- Writing skills must form one part of a fair admission process, with graduate level students who can demonstrate the ability to study at master's level supported with their application.
- Monitor the demand and uptake of master's students and review the implications.

Q.5. What knowledge and skills did students expect to develop?

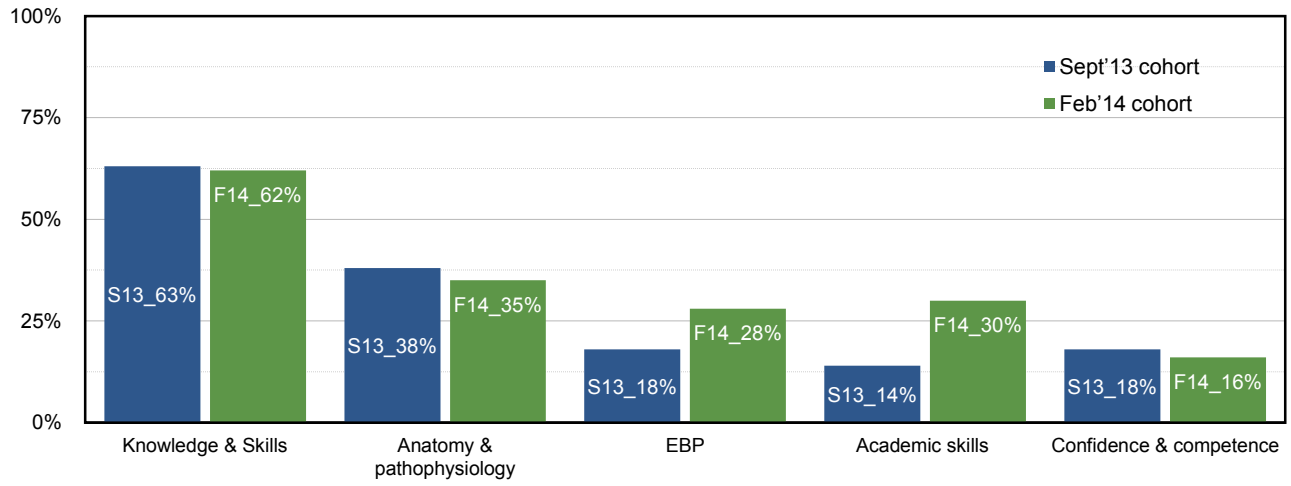

Figure 24. S13 and F14 key themes

F14 Student comments:

'*A&P* will help me massively in my work' (p.36), deepen understanding and build my confidence' (p.6), 'will make me a more *confident* practitioner' (p.10)'. Develop knowledge that supports my *decision making* in practice' (p.18, similar: 23, 24, 35, 38), be '*able to challenge / improve care*' (p.29, 31).

'*Evidence-based* approach – gives me knowledge and skill to look after critically ill patients safely' (p.16).

'D*evelopment of my knowledge base should have a positive impact on my nursing practice*' (p.5, 32). No response = 2

Learning / outcomes

Strong clinical focus included a recognition of the need to understand altered physiology in the critically ill, along with the *evidence base* so students can critically understand what they are doing, informing *clinical decision making*. Of the students, 24/44 thought the CCP would positively impact their practice; only one student (p.4) felt the course would have no impact.

Actions / what did we want to learn?

- Develop pathophysiology within the course.
- Underpin teaching materials with *EBT* to support 'knowing'.
- Develop active learning teaching strategies to close the theory-practice gap; foster critical thinking / *clinical decision making,* such as case histories.

Q.6. Did students achieve the knowledge and skills they expected to develop?

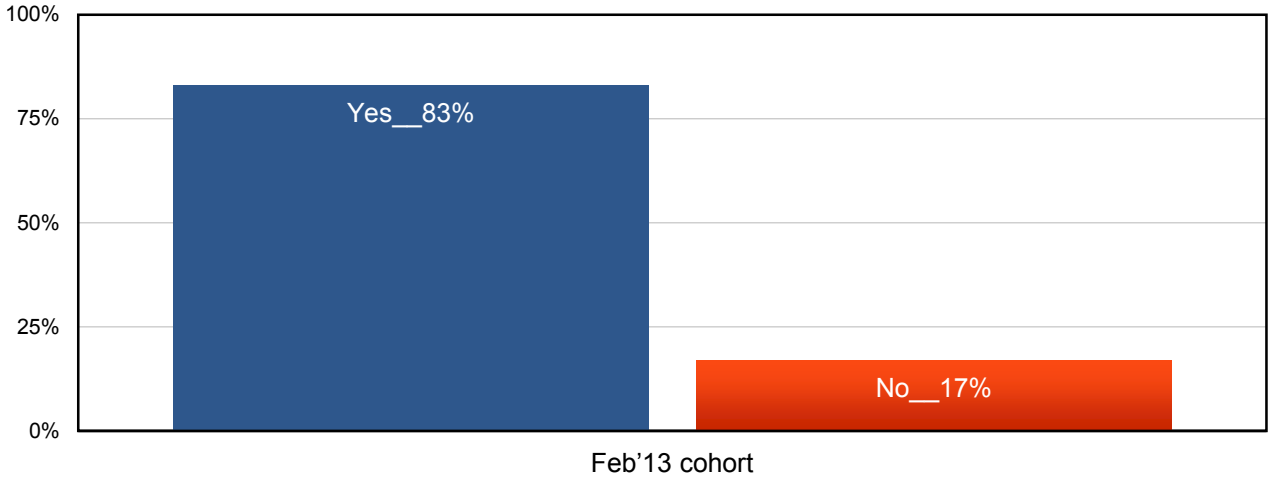

Figure 25. Did the students achieve the knowledge and skills they expected to?

F13 Students:

'Understanding of what's happening to the body's organs in illness and why we treat people the way we do' (p.2), *'it has helped develop my professional ability as an ICU nurse'* (p.15)

'A more in-depth understanding of why we do things' (p.13), *'to provide better care for patients by using evidence-based practice'* (p 11) (x 3 similar comment)
'Discussing with peers the practices that occur within other units –(x 8 positive comments)
'I feel I have developed personally and professionally…more confident to apply for further courses' (p.10), *'given me confidence writing at level 6'* (p.17).

A8: '*Some* [study days] *were too basic* (FG, 23/1/2014); *'The course is too basic'*
A12: 'It would be good doing case scenarios… it makes you think about the big picture and what you are doing with your patient' (FG, 23/1/2014).

'I was unable to do master's level despite already having an honours degree (p.16),
'I already have a degree; my goal is master's (p.19, 18).

Learning / outcomes

These students had completed the course and were not impacted by recent curriculum changes, but their feedback affirmed the areas of learning critical care that students most value: understanding pathophysiology, evidence-based practice, developing their academic skills and the opportunity to discuss practice with peers from different units. A new theme emerged, that the CCP was pitched at a level that was too basic; a concern given data indicated these were less experienced students than future cohorts due to changes to the entry criteria.

Actions / what did we want to learn?

- Dissatisfaction with master's access and comments relating to the style of teaching, particularly the value of case scenarios reinforced the need for educational reform.
- Results and comments disseminated to the Programme Committee, Curriculum Working Group and lead nurses.
- Continue to question and evaluate the impact of changes.

Q.7. What do students perceive as the value of the academic study in the CCP?

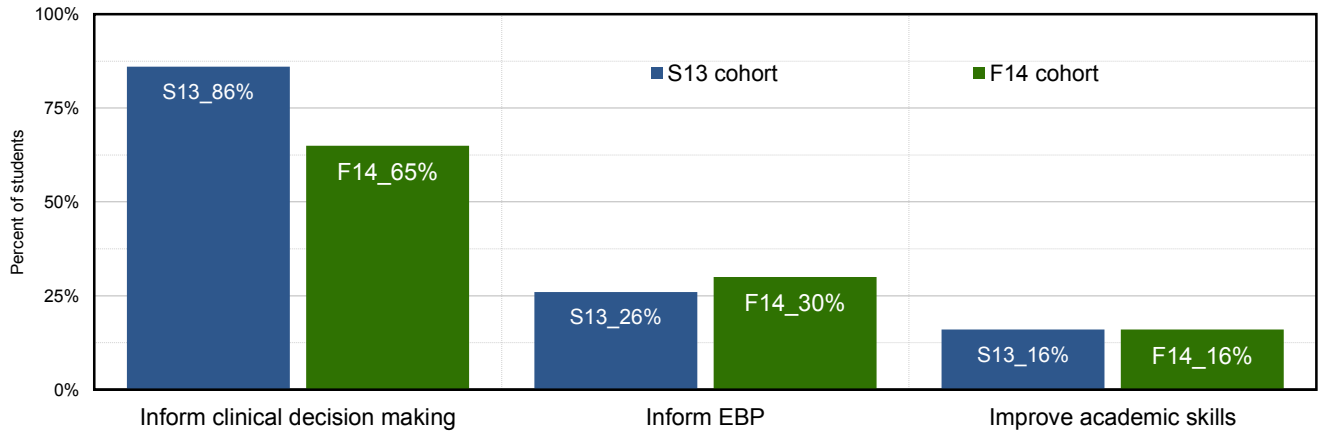

Figure 26. Pre-course students' views on the value of academic study within CCP

F14 pre-course:

'High value, evidence base should always underpin our practice' (p.29, similar: 19, 22, 26, 30

'Explore the evidence base to support clinical decision making to enhance care' (p.38, similar: p.7, 18, 23, 24, 29, 33, 35, 37).

'Being able to critically assess a situation. The ability to write an essay less so. Being able to analyse information…will help when looking at best practice' (p.1).

'Development of analytical skills necessary for problem solving and use of EBP' (p.7).

F13 post course: 74% believed academic study made them better critical care nurses

'*Underpins practice with evidence that is current'* (p.5, n=3 similar)*; 'decision making'* (n=2)*; 'working at a higher level has made me a better nurse' (p.10).*

'A critical understanding of what it is you are actually doing…and then putting it into practice' (A11, FG F13, 23/1/2014).

Learning /outcomes

Students pre-and post-course consistently attach high value to undertaking academic study, with 87% of S12 and 74% of F13 students reporting it had improved their clinical practice. None reported it had no value. Student comments highlighted the importance critical care nurses placed on using academic study to learn the *EBT* and intellectual skills that inform their *clinical decision making* (rather than the focus being on developing their academic writing and presentation skills).

Actions / what did we want to learn?

- The classroom observations during the first two cycles of action research demonstrated that the teaching materials used during eight of the 12 study days were either unreferenced (respiratory 1 and 2, cardiovascular 1 and renal) or the referencing was noted to be weak (partial) (gastro-intestinal, neurology, infection control, ethics). These teaching materials were not meeting the student expectations expressed above. The study day materials required underpinning with a robust EBT, and teaching strategies such as case histories were considered to support students to apply knowledge directly to their clinical decision making: Curriculum Working Group to explore the literature in relation to EBT and the use of case histories. Timeframe: Feedback in March 2014 (source: Programme Committee, April 2014).
- Next cycle: explore with students completing the CCP whether they apply the learning gained during academic study to their clinical decision making.

Q.8. Is the course developing critical care nurses who are fit to practice? (F13 cohort)

a. Do you feel attending this course has made you a better critical care nurse?

0 – 1 – 2 – 3 – **4** - 5 (**mean 3.8**, range 3-5) (29/34 students**)**

('0' indicating no improvement and 5 indicating a very high level of improvement)

'Feel more confident, increased knowledge of clinical procedures, A&P and critical illness' (p.12).

Tell us if or in what ways the course has developed you as a critical care nurse?

'*A&P* has developed me greatly, has been applied to practice… my confidence in my ability has grown' (p.10) (x 7 similar comments).

'Enhanced knowledge and the evidence base to support it' (p.14) (x 2 similar).

'Critical analysis skills – why things are done' (p.1) (x 2 similar comments).

b. Has attending the course improved your confidence as a critical care nurse?

0 – 1 – 2 – 3 – **4** - 5 (**mean = 3.9,** range 2-5**) (29/34 students)**

('0' indicating no improvement and 5 indicating a very high level of improvement)

'I know the rationale for doing things. If challenged, I can now give explanations'

'thoroughly enjoyed this course…It has increased my confidence and inspired me to continue with education' (p.15).

Learning /outcomes

- F13 students reported that the CCP had made them significantly better (3.8/5), more confident critical care nurses (3.9/5), indicating the course was fulfilling its primary function.
- Underpinning knowledge is cited as a key reason, highlighting A&P, though there were mixed views as to whether the A&P is taught in sufficient depth, as many would like more pathophysiology. This correlates with the findings from the classroom observations, which rated the presence of pathophysiology in the critical care unit as 1.57/3 (weak).
- Assessment in practice not highlighted as a problem by this cohort, as had been the case with previous students.

Actions / what did we want to learn?

- The baseline Likert scores provided a key performance indicator. Would the changes to the programme improve these scores?
- Audit of clinical areas and mentor updates introduced (Programme Committee, April 2014).

- **NEW QUESTION** in next cycle to evaluate students' experience within practice relating to the assessment of their clinical competence (links to the development of clinical confidence).

Q.9. Are there any areas of learning in which you feel you will require particular support? (pre-course)

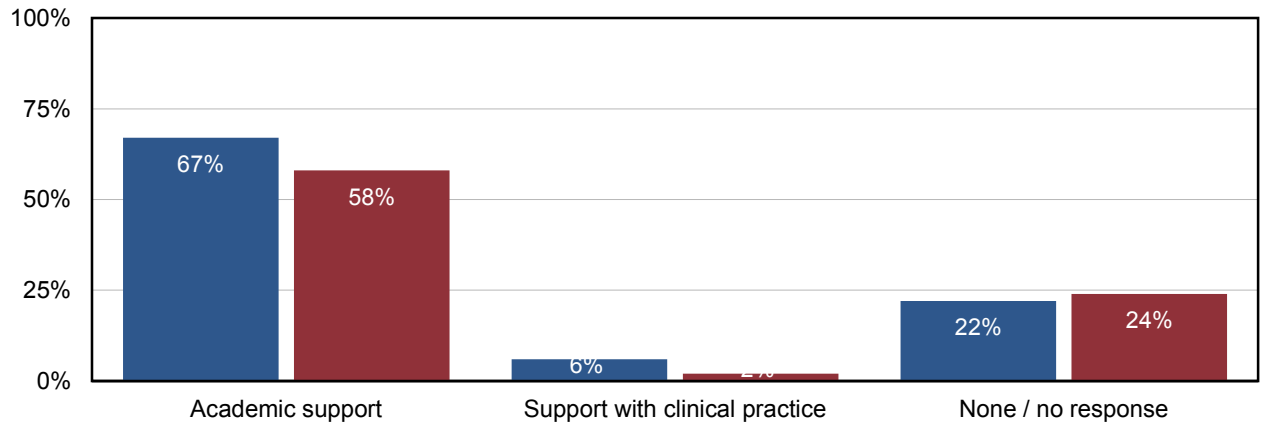

Figure 27. Areas of learning with which students feel they most require support

'*Critical writing skills'* (p.16) (n=17 similar), 'Yes – not studied for many years' (p.43) (x 2 similar); 'More sessions about academic writing' (p.1) (n=3 similar).

'*Writing level 7* will be a new experience' (p.22) (x 6).

Learning / outcomes

Students were consistently most anxious about their ability to successfully complete the academic, rather than the clinical component of the course. This anxiety was understandable given they were part-time students, not routinely involved in academic outputs, with many not having studied for several years. It was also well placed given the relatively high academic referral rate, which contrasted to very low practice referral.

Action / what did we want to learn?

The Programme Committee (May 2015) introduced assignment briefs and formative assignments, supported by formal timetabled tutorials; overcoming a reluctance to build these academic features into the fabric of the CCP. The impact of these measures required evaluation to determine their impact upon student academic performance.

Q.10. Are there any changes you feel would improve the Critical Care Programme?

A8: Some of them were just too basic to me.

Moderator: 'Are you talking about the content or the manner in which they were delivered?'

A8: 'The content and sometimes the way it was delivered as well' [all agree].

A13: 'Yes definitely the way it was delivered' [negative tone].

A8: 'I liked the presentations, but when they were interactive and we got involved…Some days everyone was quiet, and it was mind numbing.'

Moderator: 'We have been questioning whether there is enough nursing care present?'

A12: 'It would be good doing more case scenarios, it makes you think about it, getting x-rays, and makes you think about the big picture and what's going on with your patient….I did feel that the acute care unit was all well and good, but lacked depth' (A8, A8 W & A10: agree) (FG, F13, 2014). *'I think they should be in more depth* [study days] (F13, p.21).

Learning / outcomes

Important consistent themes emerged from the questionnaires, but the focus groups often established the students' deeper thoughts and provided some evidence that many students

felt the programme lacked depth in terms of the clinical acuity, expected by experienced critical care nurses.

Actions / what did we want to learn?

The concept of developing a new CCP focusing solely on critical care emerged from the classroom observations and student feedback. The action research provided students with an influential voice, which supported major pedagogical and curriculum change. The next step was to research the educational approaches that would support the development of critical thinking and decision-making skills within nursing critical care education. This required developing teaching strategies such as case studies, which facilitate the application of critical care knowledge directly to the dynamic complexities of providing nursing care to critically ill patients and their families. The Curriculum Working Group (March, 2014) divided into two groups: case study and EBT to research the evidence supporting these interventions, with changes actioned for the cohort starting at the beginning of September 2014 (Programme Committee, April 2014).

Student academic performance (February 2014)

Academic performance was a key performance indicator for assessing improvement in the quality of the programme. One year into the study, there was no evidence of consistent improvement. The assessments occurred every six months and the interventions had not been in place long enough to take effect. The first set of classroom observations had only just been completed; the changes to teaching practice in terms of underpinning materials with EBT and introducing case studies were still a work in progress; and for the students completing the assessments, the formative assignments had been optional.

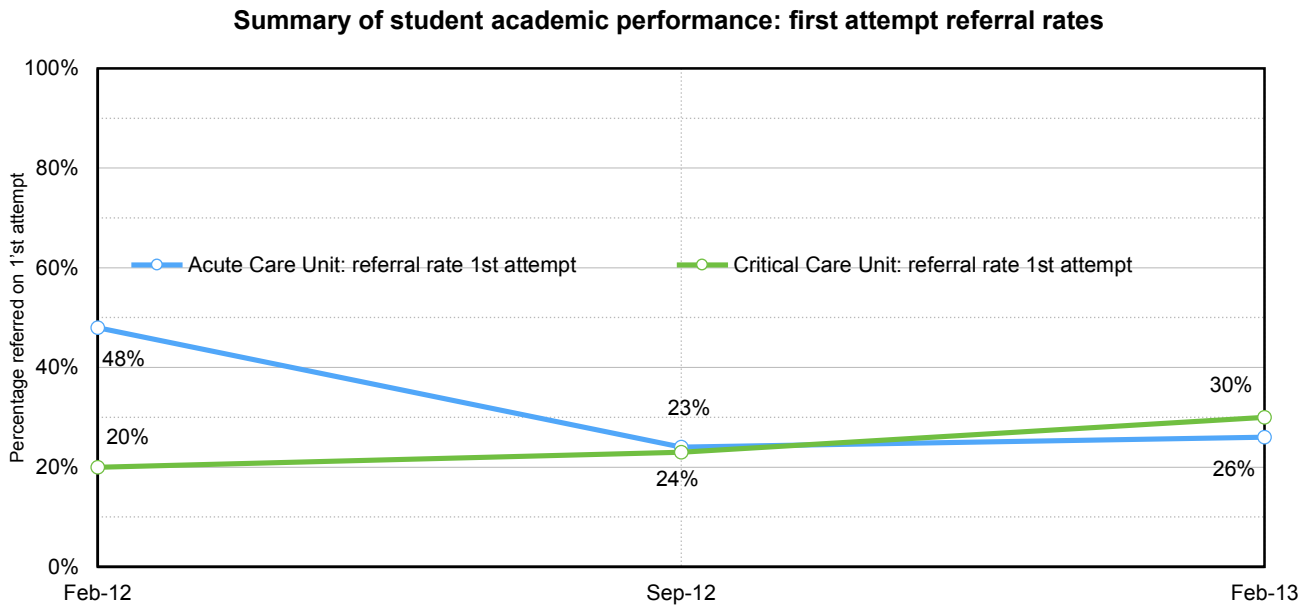

Figure 28. Student cohort results. Period February 2013 – February 2014

The transition was slow, based upon cycles of listening, learning, acting and evaluating; with results below disheartening for the team, testing their confidence in the action research process. The next section is included to demonstrate the action learning process, reflecting the journey of learning undertaken alongside the MCCC team, which informed the interventions and outcomes in the second half of the study.

Discussion and Learning: Midpoint in the Study

This was a period of pause and reflection, to take stock of what we had learnt, consider the findings, their significance and agree the next steps. In this sense, our experience of performing action research was similar to the deductive and inductive, the action methodology described by Baumfield et al. (2013) and McAteer (2013). The research exploring the reasons behind the higher than expected academic referral rates, involved analysis of large volumes of data, sifting through this to identify and examine key themes to share with the MCCC team, followed by discussion and theorisation about potential

solutions. The results from the classroom observations and student feedback provided sufficient evidence that the curriculum content and teaching methods were poorly aligned to meet both the clinical practice and academic needs of contemporary critical care higher education. The quality and format of the CCP was not meeting the learning needs of many students, and several key themes required a review of the corresponding literature to inform potential solutions.

The requirement to underpin the programme with a robust evidence base was agreed. The pressing issue was to explore the literature to evaluate if there were teaching strategies that would better support both clinical and academic development. A report by Lovegrove and Davis (2013) on the future of paramedics' education concluded that clinical education needed to align the development of *critical thinking skills* to the context of clinical practice. The report advised using teaching methods such as case scenarios, supporting the application and development of reasoning to *clinical decision making.* This provided reassurance that we were on the right track. These key themes required further exploration to consider their value and potential integration within the curriculum.

Critical Thinking

> There is nothing we do as humans that does not involve thinking. Our thinking tells us what to believe, what to reject, what is important, what is unimportant, what is true and what is false. (Elder and Paul, 2013:1)

This reminds us that our ability to think, and the quality of this thinking and these decision-making processes, are the skills that we use to varying degrees every day. These generic skills help shape our personal, social and professional lives to make sensible, informed,

well-balanced and fair-minded decisions. This may be a generic description, but Elder and Paul (2013) recognise that thinking clearly and logically is skilled work, requiring guided learning from academic tutors and practitioners within clinical practice. The academic framework used within the CCP assesses students via a written assignment and oral presentation; they are designed to measure their attainment of these intellectual skills, including the standard of their clarity, precision, relevance, accuracy, depth, breadth, logic, criticality and fairness (Elder and Paul, 2013:15).

These are complex skills to master, never mind teach and assess with precision. The PBE team were relatively new to teaching and assessing within graduate and master's education. The marking team (five educators) were competent in assessing and grading academic performance, but even with three years' experience, they continued to require guidance and reassurance. The academic degree and master's level descriptors were discussed with the whole educator team to create a shared understanding of the intellectual standards we required students to achieve (July, 2014 PEG). All the educators required a clear grasp of the academic requirements to be able to tailor their teaching to help students develop these intellectual skills, and learn how to apply these within the context of the assignments and contemporary nursing practice.

Critical thinking in nursing

The development and application of critical thinking in nurse education is given particular resonance in the light of recent cases of poor care within the NHS at Mid Staffordshire. Elder and Paul (2013:61) recognise that staff, to varying degrees, can become institutionalised, accepting without due question the norms of the social group and setting within which they belong. The study days and academic assignments provide students from different critical

care units with a forum to discuss, compare and appraise their practice, providing the opportunity for professional growth and learning.

Fesler-Birch (2005:60) explains that in nursing critical thinking involves the students using their cognitive skills to discriminate and analyse information, before applying logical reasoning to decision making in clinical practice (2005:60). Chabeli and Mangena (2005) add that critical thinking, especially within critical care, involves the interpretation, analysis and evaluation of evidence, which must be considered within the patient's specific context to inform reasoned, evidence-based clinical judgements. Moon (2008) recognises the complexity of this process, as nurses use their intellect to draw on their knowledge, values and experience to develop their practice in a professionally informed and responsible manner.

Teaching needs to reflect this process by providing students with the opportunity to critically evaluate the applicable EBT and professional guidance within the context of individualised patient care, just as they do in practice and as they are required to do during their academic assignments. The application of EBT to practice situations makes it transferrable, which is important in allowing nurses to challenge practice and drive quality improvement within critical care. The lead nurses expected this outcome from staff attending the CCP and is one of the key reasons they valued the academic contribution (Lead nurse, FG, 2013).

How could we best support the development of these intellectual and clinical skills?

A key objective of this research was the development of a curriculum that helped our students to become critically reflective, applying EBT to practice in a clear, analytical and reasoned manner. The initial key driver was to improve students' critical thinking skills to

improve their academic performance. A wider objective was to improve the quality of scholarly and clinical performance by developing an educational model in which students learnt both the art and science that underpins excellence in critical care nursing. The question was how could we best achieve a synergy of theory and practice within the context of critical care nurse education?

Elder and Paul (2008:35) explain that any teaching strategy designed to develop critical thinking ability needs to be integrated into a well-designed curriculum focused on engagement and learning. They recognise there is no perfect technique or method for fostering critical thinking or one ideal method for engaging the intellects of students. Teaching strategies need to adopt a range of approaches, which engage and challenge students as active learners, facilitating critical discussion of their clinical practice. This contrasts to the current 'training' model because it requires the tutor to move beyond the simple goal of knowledge transfer, utilising a multifaceted approach designed to develop intellectual skills. This approach requires a high level of flexible teaching skill to meet the needs of students with varying intellectual abilities.

The classroom observations demonstrated learners were highly engaged, but teaching needed to provide planned forums for them to employ and recognise when they were using skills of criticality, evaluation and synthesis, with new knowledge applied directly to the context of everyday clinical practice. Too much time was allocated to lower thinking level activities, such as anatomy and physiology lectures, which facilitate learning that is readily forgotten. The passive learner approach had failed because the tutors were working harder than the students (Elder and Paul, 2008), when what we really wanted them to do was to think deeply, to construct their knowledge and understanding.

Higher education was beginning to evolve, encouraging engagement in critical conversations. During the study days, this approach provided planned opportunities for discussion surrounding how to deliver best practice to individual patients using case scenarios. This decision-making process involved nurses critically exploring a range of EBT, and reasoning using their professional knowledge and experience to reflect and agree the best care solutions. In practice, the development of this contemporary educational ecology was not a smooth or quick transition because we were learning together how we could improve; and like all cultural change, this was a lengthy process (see Kotter, 1996).

These concepts and insights surrounding the development of critical thinking within nursing practice were helpful in shaping our thinking during the continued revision of the curriculum. Price and Harrington (2010) identify that critical thinking involves drawing upon *knowledge* of the situation and r*easoning* the options during *decision making*, followed by *reflection*. Each of these elements is considered below in relation to the CCP.

Knowledge

The introduction of the 12-month minimum experience entry criterion, along with completion of step 1 competencies increased students' baseline knowledge and experience. The quality of the information provided was the foundation upon which students based their clinical decisions, influencing the quality of patient care. A key priority was to underpin the CCP with a robust referenced evidence base. The curriculum needed to enable students to develop the skills to gather and make judgements on the quality of the information that underpins their academic and clinical practice.

Decision making

Students needed opportunities to apply clinical theory directly to everyday nursing practice situations, to make sense of it, practising decision making as they would in the context of real world situations. Case histories and discussion provide this opportunity with tutors, evaluating the EBT and merits of different actions, reflecting on the potential consequences within a safe environment.

Reasoning

Peer-to-peer learning allowed students to organise information, reason and articulate their arguments with their colleagues as they do in practice. Case studies or debates were recognised as key teaching strategies because they assist the development of key transferrable skills, including intellect, empathy and humility (Elder and Paul, 2013), with students being asked to consider the views of others, and recognise their abilities and limitations.

Reflection

Nurse education is strongly associated with the skills of reflection, making sense of, and learning from our experiences within practice (Price and Harrington, 2010). Reflection is considered a key element of critical thinking because it leads to deeper levels of personal and professional understanding (Craig, 2009). This is because it provides us with the opportunity to question our clinical judgement and ask if things could have been done better, using models such as Kolb's (1984) learning cycle.

Clinical judgement and decision making. Good decisions = safe care

Nurses caring for critically ill patients routinely make clinical judgements and decisions with and on behalf of their patients and families. The complexity of the decision making ranges from relatively simple, such as whether to alternate a patient's position, to more complicated decisions involving changes to ventilatory settings, fluid administration or inotropic management. The consequences of a wrong decision can have a major, immediate, negative impact on a patient's well-being. These complex decisions require the development of sufficiently wide and detailed knowledge to allow practitioners to take into consideration all the possible variables of such interventions, viewed on a short and longer term basis, as illustrated below:

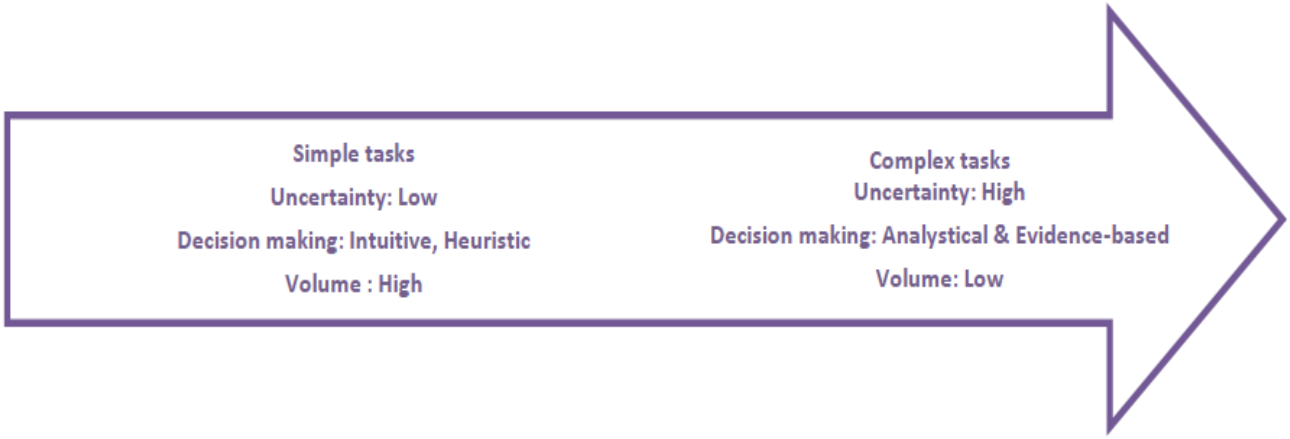

Figure 30. Good decisions = safe care (NHS, Education for Scotland, 2013)

Clinical judgement is a balance of experience, awareness, knowledge and information gathering, consulting with colleagues and EBT for guidance. Standing (2011:8) defines clinical decision making for nurses as the application of clinical judgement to select the best possible evidence-based option to control risks and address each clinical need as it arises. It is about 'joining the dots' to make an informed decision, drawing on a variety of information and knowledge sources.

Clinical judgements and decisions may be made urgently and intuitively, with little time for consideration, such as in emergencies; or they may require time to step back from the situation and make well-balanced decisions. Benner (1984) was clear in her theory of development from novice to expert: it is knowledge combined with a requisite period of practice experience that nurses require to achieve clinical competence and later, expertise. Nurses new to ICU are novices within this environment, and it takes between two to three years' experience to achieve overall competence; with at least five years needed to develop expertise; an intuitive grasp of the patient's holistic healthcare needs.

This view is supported by Kahneman (2013), who argues that we think fast and slow. The fast thinking is automatic and relies upon intuitively knowing what to do, based upon our previous experiences. The slow process is only used when we encounter a new problem, one that requires us to concentrate and apply conscious rational thought. His theory resonates with the experience of many students, for whom academic study at degree or master's level is a new or unfamiliar mental challenge and is therefore likely to result in a large volume of concerted slow thinking. Kahneman (2013:43) notes we naturally seek to avoid this slow thinking, preferring to focus our time on simpler tasks that require less concentration. This is corroborated by student consensus that academic support was their primary learning need (71% of S13; 58% of F14), which is borne out by the consistently high academic referral rates.

To address this learning need, formative assignment support was introduced midway through each unit and at least four weeks before submission dates. This action met with resistance; the MCCC team were reluctant to create time within congested study days, as they did not want to remove any clinical content. However, the high referral rates required

immediate attention, and as Kahneman's work demonstrates, less academically able students need timely support, receiving formative feedback, rather than following a summative submission. In this sense, the development of academic skills is little different from clinical expertise; both require considerable student effort, and supervised practice, with timely feedback to correct errors.

Kahneman's (2013) theories have wider implications when applied to the context of clinical learning and teaching within critical care. He noted that the fast, intuitive responses are highly dependent on experience and our intuition can often be wrong when applied to unfamiliar situations. Kahneman (2013) identified that expert professionals use intuition frequently, using their 'gut' feelings. They are often correct because they have experienced similar situations in the past and this helps them make the correct decisions to resolve the situation. For Kahneman (2013:11), intuition is nothing more than pattern recognition of things we have encountered before. This skill is learnt and is most reliable within an environment in which we are both knowledgeable and experienced. When we move to a new area, such as a nurse starting work in critical care or facing a new unfamiliar situation, our powers of intuitive fast thinking are less reliable. Nurses new to critical care may struggle to decide the best response to a patient's falling blood pressure, when more experienced operators are likely to quickly consider all the likely causes and instigate rapid treatment.

Benner (1984) and Kahneman (2013) agree that sufficient experience and knowledge within a similar environment are pre-requisites to developing competent clinical skills and intuitive decision making. They agree that experience within the environment in which nurses practice is key to developing competence and that junior nurses new to a specialism are likely to have to engage in slower more deliberate and rationale thinking to make decisions

(Benner, 1984:3; Kahneman, 2013). As they gain knowledge and experience in making the correct decisions they naturally gain confidence and will in time become more intuitive. This theory was reassuring because it supports the changes to the entry requirements made during the first half of this study. This change resulted in more experienced students who had demonstrated basic level competence within their working environments and were better prepared to contribute to discussion and derive greater benefit from the CCP.

The development of clinical decision-making skills

Benner et al. (2011) argued that developing the quality of nurses' decision making is best achieved by expert staff (PBE) using case histories to link EBT directly to patient care through scenario-based learning. This learning model is one that recognises the value to students of learning together and applying EBT, with guidance from expert clinical nurses.

The quality of this guidance within clinical practice and the higher education setting is paramount to the development of safe professional practice. Healthcare professionals are accountable to patients, their employers and professional bodies for the quality, safety and effectiveness of their decisions and they must be able to explain the reasons behind their actions and omissions (Standing, 2011:7). For nurses either new to or experienced within the critical care environment, the responsibility for making sound clinical decisions is part of the role, and a lack of professional insight forms no legal defence. Nurses are personally accountable and must be able to justify their actions or omissions to their clients, employer and professional body (NMC, 2015). Being involved in the making of these decisions is part of a learning process that develops with our depth and range of knowledge; an understanding of our limitations; and from listening to the views and observing the actions

of experienced colleagues (as represented in this action research). This clinical decision-making process is illustrated below.

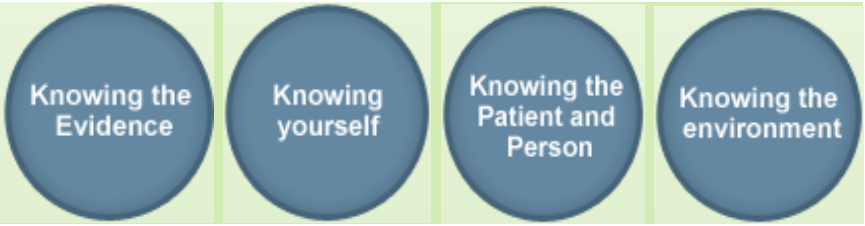

Figure 31. Clinical decision making, NHS Education for Scotland (2013)

Reports by NHS Education for Scotland (2013) and Bluestone et al. (2013) commissioned by education purchasers and providers in healthcare reached the same conclusion as our findings, that education and training should be focused on supporting the development of bedside clinical decision-making skills. In order for critical care higher education to be relevant, it must be in touch with current practice and be directed at developing students' confidence, knowledge and skills in making well-reasoned clinical judgements. It also requires knowledge of the best available evidence to support and justify these decisions. Critical care nurses work within a team, with collaborative decision making common. Case studies replicate this process by providing a forum for students to work with peers in applying their theoretical knowledge and clinical experience to discuss and agree clinical decisions.

The development of confidence

The development of confidence was a common theme, and led us to change the questions for the subsequent cohort to ask them to quantify this. Standing (2011) identifies three factors involved in the development of confidence in nurses as personal, theoretical and practical. The critical care nurses in this study sought confidence from knowing their assumptions, decision making and their clinical judgements were based upon a robust

recognised evidence base, allowing them to know they were doing the best for their patients. This insight is congruent with the findings of Kahneman (2013) and Benner et al. (2011) in that it established the importance of facilitating student engagement as active learners, practising their clinical reasoning and thinking critically in their role as nurses to plan care in response to complex unwinding and dynamic case histories.

The development of realistic complex clinical scenarios and the underpinning of the CCP with a robust evidence base were central to helping students develop the higher level intellectual, clinically applied thinking skills, and for building their confidence. This represented a major transition for the educators: the acceptance that it was no longer sufficient to simply share their clinical expertise. A critical care nursing curriculum needs to be congruent with the expectations of critical care practice and higher education. This means using teaching materials referencing the best available evidence, which is fused with tacit knowledge to develop contemporary nursing knowledge.

Evidence-based practice

Always practice in line with the best available evidence

The Code (NMC, 2015:7)

The gold standard EBT for doctors is science in the form of randomised control trials (Parahoo, 2013), whilst nurses have traditionally tended to rely on their experiential knowledge or that of their colleagues (Pravikoff et al., 2005; Thompson et al., 2005). This research from 2005 contrasted with the findings from this study (S13 and F14, 2013/14), with 26-30% of students identifying their primary expectation or perceived benefit from attending the CCP was learning the evidence base that would inform their decision making

in practice. This indicates EBT has become very important to many contemporary critical care nurses, perhaps reflecting the influence of operating within such a medically dominated environment or a generational change in learning expectations. The value placed by students on learning the evidence upon which their unit practices were based does not denigrate the value of the educators' tacit knowledge, which was an important strength of the CCP. Rather it illustrates the value of both sources of knowledge.

The timing of this study is a measure of the changes within healthcare and society in general, with the quality of nursing care highly criticised within the Francis (2013) and Keogh (2014) reports. In light of such well-publicised failings, it is unsurprising that there is a trend towards a more critical and better informed public, who expect high quality healthcare rather than simply being grateful recipients, regardless of the resources in place to support it (Cleary-Holdforth and Leufer, 2009).

This cultural shift, combined with the need to deliver clinically effective and safe healthcare, may explain the importance the students placed upon evidence-based practice. Individual healthcare professionals have self-interest in delivering care based upon best recognised practice to achieve the best outcomes for their patients, alongside the awareness that they are professionally accountable. The views expressed by our students indicated that EBT has become an expected feature of the CCP, so it was important that we shared the same interpretation of this term.

Definition

Over the past two decades evidence-based practice has become recognised as the gold standard for quality healthcare because it represents 'the integration of best research

evidence with clinical expertise, and patient values' (Sackett et al., 2000:1). Combining this with a clinician's individual experience leads to more informed decisions, helping to quality assure patient care (Profetto-McGrath, 2005; Melnyk and Fineout-Overholt, 2005). This definition highlights the multifaceted nature of this term, and the need to be able to continually access and judge the usefulness of evidence when applying it to the context of each patient's care.

Thomson et al. (2000) explored how evidence-based practice from research or clinical guidelines could be integrated into critical care nursing practice using integrated care bundles, supported by education to help with understanding and adoption. This has proven successful with ventilator bundles reducing ventilator assisted pneumonia rates, and sepsis pathways reducing unwarranted variations in practice (Horner and Bellamy, 2012; Parahoo, 2013). Protocol driven care does not negate the need for nurses to appraise the underpinning evidence base to inform application and clinical decision making. The literature supporting this approach and issues relating to embedding EBT into the curriculum are now explored.

Evidence for change

The utilisation of EBT requires nurses to develop the skills to locate relevant best evidence critically appraise it and then integrate it into their practice (Melnyk and Fineout-Overholt, 2005; Linton and Prasun, 2013). These formed many of the intellectual skills that were assessed by the academic assignments, which showed no sign of improvement at this point in the study, with referral rates of 33% in April 2014. This was because simply embedding a visible referenced evidence-base into the curriculum does not develop intellect and application. Mahanes et al. (2013) rightly recognised that the vital next step was the

implementation of a teaching strategy that supported students to practise utilising these thinking skills, appraising and applying EBT to improve their academic and clinical practice.

There was evidence that some educators recognised the value of academia, with one commenting that:

> *It gives them* [students] *the evidence and the knowledge they need to challenge practice...rather than saying "I don't agree", you can put your argument, your rationale for why you don't agree. You have got the tools to challenge members of the multidisciplinary team.* (FG2, 22/8/13)

This warmth towards academia was at odds with the slow pace of curriculum change. EBT was barely evident, with improvements frustratingly slow as tutors either listened to or chose to ignore the research findings. This represented a cultural lag, with many of the educators continuing to teach in the same way they had always done, with little insight into the teaching strategies required to facilitate the development of higher order thinking skills. In this respect, the educators were continuing to deliver 'their' programme, which did not meet many of the learning needs of their students, or the stated expectations of lead nurses.

The CCP was not an isolated case of nurse educators simply passing on a collective 'knowing', based upon knowledge and experience. Brady and Lewin (2007) identified nurses often rely on their intuition, tradition and local policies, rather than EBT. The problem with this approach is twofold: our evidence is that nurses studying critical care practice expect higher education to incorporate the best available EBT; secondly, if you present

unreferenced materials in a primarily descriptive manner, less academically able students will follow this lead and replicate this behaviour in their assignments and clinical practice.

Looking beyond our local perspective, and clinical education, the extent to which UK universities are improving students' academic skills to graduate standard, is being questioned. The government is concerned regarding the quality of university education, with the level of academic gain requiring independent scrutiny, testing students thinking skills at the start and end of graduate programmes (see HEFCE, 2015). This mistrust in the integrity of the sector in teaching and assessing relates to concern that many are favouring high pass rates at the expense of academic standards. This pressure was palpable during this study, but the strong sense within the collaboration was that we were responsible for upholding nursing standards in clinical practice. This focused minds on improving the quality of what we do, rather than blaming the students or lowering academic standards.

Implications for individual nurses and practice

Evidence-based practice has become a pillar of nursing, underpinning safe and effective care and is considered a professional imperative (Centre for Reviews and Dissemination, 2008; NMC, 2015). Making poorly evidenced decisions may harm patients, professionals' careers and their employers through vicarious liability. However, knowing the correct way of doing something does not mean that people will always act accordingly, as illustrated by hand washing compliance research, which revealed 28% of nurses did not adhere to established best practice guidelines (Creedon et al., 2008). This human trait acknowledged there was reason to believe that sharing EBT would improve practice, given 60-70% of respondents cited their prime motivation was to provide better patient care.

Implications for the MCCC

The MCCC was well positioned to disseminate evidence-based practice, with its access to large numbers of staff coming from every critical care unit in the region; there is consistent evidence that the use of EBT significantly improves patient outcomes (Profetto-McGrath, 2005; Cleary-Holdforth and Leufer, 2009; Craig and Smyth, 2014). The MCCC was responsible for the quality of its taught practices and it was paramount that the evidence base was clearly identifiable, correct and defensible. The weakness of the CCP in this respect was recognised, with the Curriculum Working Group agreeing to underpin and fully reference the programme with EBT by September 2014. However, there was discussion over interpreting what constituted 'best practice'.

What constitutes 'best practice'?

Critical care nursing involves more than complex technical interventions associated with the medical nature of this environment (Wallis, 2005; Mahanes et al., 2013). Nursing is a holistic and highly practical undertaking and the evidence we select when deciding best practice should reflect this. The Curriculum Working Group agreed to combine research with the tacit expertise of the educators to communicate best practice representing the art and science of nursing. This view is supported by Kitson (2002), who recognised that in nursing best practice combines medical research with softer sources of 'knowing', such as experience and reflection. Carper's (1978) four ways of 'knowing' in nursing provided a basis for shared understanding of the sources of our knowledge.

Four ways of knowing	Meaning
Empirical Knowledge	Found in textbooks or journals that is derived from research and is provable
Aesthetic knowledge	Subjective and unique knowledge, that feels and looks right
Ethical knowledge	Based upon belief and moral codes of conduct (NMC)
Personal knowledge	Arises from experience such as sympathy, compassion & understanding

Table 4. Carper's four ways of 'knowing' (1978)

The following were agreed by the Curriculum Working Group as sources of best practice:

- Government agencies including the National Institute for Clinical Excellence, National Service Frameworks
- Nursing research and systematic reviews underpinning basic nursing care
- Clinical practice guidelines
- Professional organisations such as the British Association of Critical Care Nurses, British Thoracic Society, Surviving Sepsis Campaign and Intensive Care Society.

Clinical research was one of four strands of knowledge considered when agreeing best practice. As Fulbrook (2003) and Ciliska (2005) recognise, scientific evidence formed the dominant layer of best practice, which was synthesised with Carper's other ways of knowing to provide 'evidence-based nursing', tailored within the context of providing holistic care to critically ill patients and their families. This nursing perspective is important to assert within the 'supercomplexity' of critical care (Barnett, 2000), given the need to rationalise and view

clearly the multiple layers informing decision making, a feat which can be overwhelming for novices. It was clear from the classroom observations that the CCP needed to better incorporate these core professional nursing themes, and it was theorised that the omission of areas such as holistic patient assessments, psychosocial factors and consideration of relatives, contributed to the absence of such considerations from the students' assignments. The challenge was to incorporate evidence-based nursing, reflective of our shared values, and support students to deliver well informed, holistic nursing care.

Incorporating evidence-based nursing into the nursing curriculum

Higher education supports nurses to develop their intellectual skills, enabling them to grow on a personal and professional level, and as a result become better critical care nurses. This required the CCP to provide opportunities for students to apply these skills to the construct of their nursing and academic practice. Complex unwinding case studies would provide a forum for students to explore and apply EBT to what we do as nurses for patients and their families, enabling them to develop confidence in their knowledge and skills when they returned to practice (Ellis, 2011). The goal was to challenge students' intellects, share knowledge and close the gap between research and critical care nursing practice.

This concept is supported by Macnee and McCabe (2008) who use a 'four stranded braid' model to depict how EBT should be entwined into nursing practice. This model fits with action research; representing the bringing together of educational and clinical research and theory to help us learn how to improve the quality of student learning and critical care nursing practice. The approach embraces science and technology when combined with humane

nursing care, recognising the role of the head, the hand and the heart to critical care nursing (see Galvin, 2010; Timmins, 2011).

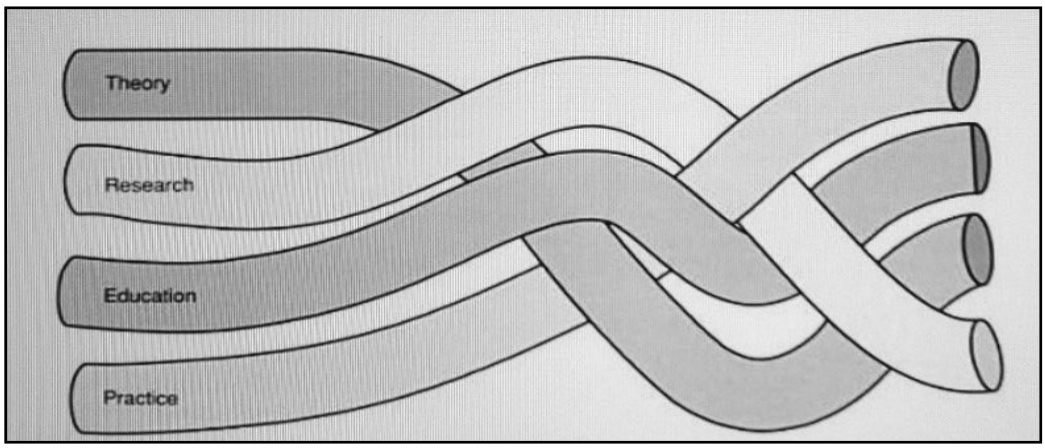

Figure 32. Macnee and McCabe (2008) 'four stranded braid' model

The integration of EBT and the introduction of realistic case studies into the programme, involved a shift of control from tutor towards a student-directed problem solving approach. This was a step towards a more contemporary empowering approach, in which professionals were asked to analyse and solve patient care issues together, allowing them to differentiate good practice from ineffective or poor practice, with the goal of enabling them to make better informed decisions to improve the standard of their nursing care (Ellis, 2011:6).

What is a case study?

A case 'study' or 'history' as they are sometimes referred to, provides a practice-based, patient-centred reference point for the critical review of clinical issues surrounding care delivery. In the context of critical care nursing, it is based upon the presentation of a patient's case history, and forms the starting point for scenario-based learning (SBL). It is defined by

Winkleman et al. (2012) as a ‘verbal or written narrative that presents a clinical problem or puzzle’ where relevant history and clinical findings are provided as the scenario progresses.

Errington (2010:17) describes them as slices of ‘professional reality’, useful in helping nursing students to explore ethical and professional issues, integrate theory into practice and anchor their learning. Whilst relatively new to nursing (Winkleman et al., 2012), they have a tradition of being used in medical schools since the 1950s (Eshach and Bitterman, 2003; Kunselman and Johnson, 2004; Henning et al., 2006). Mortimer (2016), the Chief Executive of NHS Employers, described their role as being central to reshaping workforce education around the delivery of patient care needs, highlighting their contemporary relevance.

The value of case studies in critical care education

The pedagogical theory underpinning case studies corresponded with the transitions we were seeking within the CCP. The constructivist approach aligned to achieving greater interactivity with students, helping them to develop deeper levels of understanding by linking evidence-based theory to their everyday practice (West et al., 2012:577). By immersing students in this focused and shared learning experience, students are provided with the opportunity to construct their own learning (Barak et al., 2007; Horsfall et al., 2011). In this pedagogy, it is the students who identify and analyse the key issues, using clinical reasoning to agree solutions and make clinical decisions (Eshach and Bitterman, 2003; Kunselman and Johnson, 2004; Malesela, 2009; Karami et al., 2012). This technique has been linked to improved performance of these skills in practice (Kunselman and Johnson, 2004; Mayo, 2004; Malesela, 2009), alongside improved levels of both clinical confidence (Tiwari et al., 2006) and competence (Distler, 2007). The selection of this teaching strategy was therefore

based upon the belief that the quality of care and decision making at the bedside are inextricably linked to the way nurses and other healthcare practitioners are educated (NES, 2006:10; Tanner, 2009; Benner et al., 2011).

Research drawing upon 32 systematic reviews by Bluestone et al. (2013) concluded that educational techniques are critical to the attainment of learning outcomes and that active learning techniques that integrate theory with practice, such as 'case-based learning', lead to improvements in knowledge and clinical practice behaviours. It concluded that didactic techniques that involve passive instruction, such as lectures, are largely ineffective. Nursing is a practical discipline and an important goal of critical care nurse education is to support students to become better informed and more able critical care nurses.

Engaging students in patient-centred learning through realistic patient studies facilitates discussion with peers and tutors to explore evidence, share experiences and crucially think like critical care nurses do in practice, evaluating key issues and agreeing solutions; all the time honing their critical thinking skills (Crofts, 2006; Malesela, 2009; Popil, 2011; West, 2012). Case studies ground learning in several ways. They facilitate patient focused discussions of care that allow consideration of a broad range of professional and technical issues, bringing a stronger nursing identity. They also provide the opportunity for tutors to increase or decrease the complexity of patient illness according to student experience (Miller and Nambia-Greenwood, 2010; Winkleman et al., 2012). A consequence of students commencing with at least 12 months' critical care experience, was that we began to receive more critical feedback. A theme emerged that because the study days were system based, the scenarios the students were given to consider only included patients with single organ

failure, such as respiratory or renal failure, which was remote from their typical experience of caring for patients with multi-organ failure.

The use of unfolding case studies provides solutions to several issues. The provision of detailed holistic patient presentations facilitate discussion ranging from the consideration of basic nursing issues right through to the ‘super complexity’ of critical care practice. Each case study can be planned and facilitated according to the student’s level of knowledge and responses. The students typically work in groups of four to eight to build upon existing knowledge, working as teams for 40–60 minutes to review different aspects of the scenario, before re-grouping to present their findings to their peers (Henning et al., 2006). The PBEs were well suited to this type of learning because they possess the credibility, knowledge and skills required to provide regular insightful feedback, which is key to linking theory to practice (Malesela, 2009; West et al., 2012:580). The guided discovery needs to be ’messy’ and complex enough to arouse and maintain student interest, with test results such as x-rays and blood gases made available on request (Henderson in Errington, 2010).

Demonstrating a link that proves the superiority of case studies to deliver improved practice outcomes using empirical studies is very difficult given the large number of variables (Eshach and Bitterman, 2003). It was recognised that introducing case studies provided no guarantee of an improvement in either academic or clinical performance. NHS Education for Scotland concluded there was very little evidence of a direct relationship between learning strategies and practice development outcomes (NES, 2006), concluding the most commonly accepted outcome was increased clinical confidence amongst practitioners (NES, 2006:10). These cautions provided balance to our expectations of the impact case studies would have on students’ learning outcomes. However, the evidence was sufficiently compelling to

support the introduction of complex case studies with the objective of improving the overall quality of critical care education for several reasons. They bring diversity to classroom teaching, increasing 'the joy of learning', partly by breaking the monotony of lecturen and enabling better interaction with students to assess their level of knowledge, an approach that students have reported as more satisfying (Beers, 2005; Henning et al., 2006; Popil, 2011). These interactive and analytical classroom behaviours are important because they support the development of generic transferrable skills such as teamwork and communication (Errington, 2010:28), which are noted as highly desired professional characteristics (Archer and Davison, 2008). Importantly they focus learning around the delivery of holistic individualised nursing care.

Barriers to implementation

The PBEs presented the most likely barrier given their level of control and sense of guardianship of the study days. Popil (2011) encountered similar resistance born from a sense of ownership and a desire to retain control over the look and feel of the materials by teachers during educational reform. Further, a study by Brown et al. (2009) found that most educators (78%) continued to rely on lecture-only methods, despite 36% acknowledging that case studies were the most helpful teaching strategy. To reduce these barriers, evidence supporting the use of case studies was shared with the Curriculum Working Group (29/4/14). Case studies that had been used previously were too short, lacked depth and were technically focused rather than patient centred. To develop a shared understanding, written guidelines based upon a model by Stepien et al. (1993) (Appendix 7) were shared and discussed (Curriculum Working Group, August, 2014).

Actioning the adoption of case studies

Case studies were designed to support learning outcomes including: holistic patient presentation, knowledge of condition, potential causes, pathophysiology, signs and symptoms and potential interventions (including nursing care of patient, relatives and consideration of ongoing care needs). The educators were given control over their development and the decision on which study days would benefit from their use.

Academic Assessment – A Timely Reminder

These were steps in the right direction to improve the quality of critical care education, but we needed to take more direct action to address academic referral rates. The 28% ACU referral rate in May 2014 led the external examiner to recommend replacing the assignment. The CCU pass rates had improved marginally, but it was unclear whether this resulted from the impact of our changes. The Programme Committee agreed to retain the assignment in its current format to allow more time to evaluate whether our interventions were working, which was important because if too many things were changed too quickly, we would be unable to identify which interventions were effective. The lack of clarity resulting from too much 'tangle' would have undermined the action research process of learning (Programme Committee, May 2014). The following specific actions were targeted directly towards improving academic engagement and support:

- Pre-course writing assessment to ensure students access the correct academic level.
- Formative assignment support with written feedback midpoint in each unit.
- Engage with referred students, exploring their views on why they were not successful.

Effectiveness of the data collection tools

The data collection tools were generating sufficient accurate and relevant information to inform change and meet the aims of the research. The focus groups, questionnaires and classroom observations provided us with a clear overview of the programme, delivering consistent themes and leading to improved understanding of the key issues. This maintained confidence amongst the PBE group and the Programme Committee that the information provided a reliable basis for rationale measured change.

The classroom observations were generally well accepted and did not result in the anticipated negativity or hostility to observation cautioned by Hopkins (2008). There was passive resistance, with some tutors reluctant or intransigent to changing their materials or teaching behaviour. The classroom observations exposed inherent weaknesses in curriculum delivery. The study day materials were largely unchanged from the original competency-based programme. This had been the anticipated finding, but viewing all the study days in sequence had provided unexpected insights.

The CCP, in targeting acute and critical care, was repetitive and failed to meet the needs of students from either of these distinct clinical areas. Nursing in critical care involves caring for critically ill patients within intensive care and high dependency areas, who often require support with breathing or other organ function within an extremely complex and technologically advanced environment. Acute care students require a different knowledge base and a consensus emerged within the steering group that a separate unit needed to be created for acute care. This would allow critical care students to spend the entire 12-month period focused on their speciality in greater depth, including the wider strategic issues appropriate at master's level study.

The challenge of delivering change using action research

Fullan (2007:30) provided some guidance in how to manage this substantial transition in terms of both physical materials and mindsets. He identified the three key areas of change in higher education programmes as: the use of new or revised materials; the use of new teaching strategies; and the alteration of beliefs by challenging established pedagogical assumptions. The first two were slowly beginning to take effect at this stage, but Fullan (2007) and Seimens (2007) correctly recognised that collective change must also occur in the learning ecology of the CCP for it to stick. The transition involved challenging the established mindsets of the educators, many of whom had entrenched teaching behaviour and views. Some 'backstaging' (Kotter, 1996) was required intervening behind the scenes, influencing key players, making important allies, without being seen to push too hard, which would only stiffen resistance (Lewin,1948). Ramirez and Bartunek (1989) warned that the presence of aggrieved staff can be malicious and had threatened to undermine their research. A dual approach was adopted; relying on the MCCC managers to apply pressure, whilst depending on supportive educators to quietly persuade peers.

This approach reflected a perceived need: an academic pressure to remain true to the democratic principles of action research emphasised within the literature (Gadamer, 2004; Baumfield et al*.,* 2013; McNiff, 2013) to retain the study's 'democratic validity' (Anderson and Herr, 2014). This conflicted with inner frustration, a desire to deliver the agreed actions, even impose them; a desire to control the research outcomes. These liberal values (combined with the lack of authority derived from my position) were constraining, as partial implementation of the planned interventions would limit any evaluation of their impact.

The success of this action research lay with working with allies to overcome territorial issues associated with ownership of the materials because the people who deliver the course need to share the same vision or they will not deliver it (Kotter, 1996). A key issue related to who had the final say on the how the CCP would change: the educators, the MCCC or myself, as lead for the university? Resolving this issue and achieving permanent improvements involved significant cultural and material change, within a relatively short period of time. Bringing the key stakeholders along on this journey presented the most difficult challenge for the second half of this study. It was significant that for the first time since the programme began in 2011, there was student and practice representation at the Programme Committee. An inclusive research process was generating a more collegiate approach by *all* the key stakeholders to learn how *we* could improve *our* programme.

Research cycle 3 (August–December 2014): Research Plan

Table 5 below outlines the learning objectives and data collection methods for the third and fourth cycle of research, which provided a shared, focused research action plan.

Table 5. Learning objectives and data collection: third and fourth cycle of research

What do we want to learn?	How will we do this?	Methods
Are the interventions improving the quality of the critical care programme?		Student, PBE & university link lecturer feedback. Exam results
Is the CCP meeting the stated purpose as outlined in the shared vision?	Ask students (cycle 3 & 4); PBEs and lead nurses in cycle 4	Students: FG & questionnaire (PBEs, lead nurses: FG)
Are students completing the stage 1 competencies / gaining 12 months' experience before accessing the CCP?	MCCC statistics Ask students on induction	FG & questionnaire
Are the writing assessment days working?	Ask students when on induction and completion Ask students if they are accessing the course at their chosen academic level	FG & questionnaire Audit student admission records
Has student motivation increased as we have tightened controls on access? If students were sent, would they have done it anyway?	Repeat and amended question asking students what motivated them to begin CCP – induction	FG & questionnaire
Are they more aware of the National Standards for Critical Care Education?	Ask students when on induction and completion	FG & questionnaire
Is the curriculum becoming aligned to supporting critical care nurses to achieve their learning outcomes?	Repeat classroom observations to observe changes. Ask students if their academic and practice learning needs were met	Repeat classroom observations begin September 2014 Questionnaire /FG
Is student academic performance improving? Are they developing improved transferrable skills? Why are some students unsuccessful in their assignments?	Student exam performance Moderation reports Talk to students who have failed their assignments	Exam Board / Programme Committee Ask students: FG & questionnaires
Are we developing critical care nurses who are fit for purpose?	Ask students completing the CCP to rate any improvement in confidence and ability	Ask departing students: FG & questionnaire using Likert scale
Are the changes enhancing the students' learning experience?	Ask students completing the programme their views on use of case studies, referencing,	FG and questionnaire Student representation: Programme Committee

Research Cycle 3 (August–December 2014): Results and Findings:

Population: S14 students commencing (n=30, 21 by questionnaire, 9 via FG) representing 100% of the population; and S13 students completing (n=31, comprising 23/29 by questionnaire, 8 via FG), representing 84% of the population (n=37).

Q.1. What motivates students to attend the CCP?

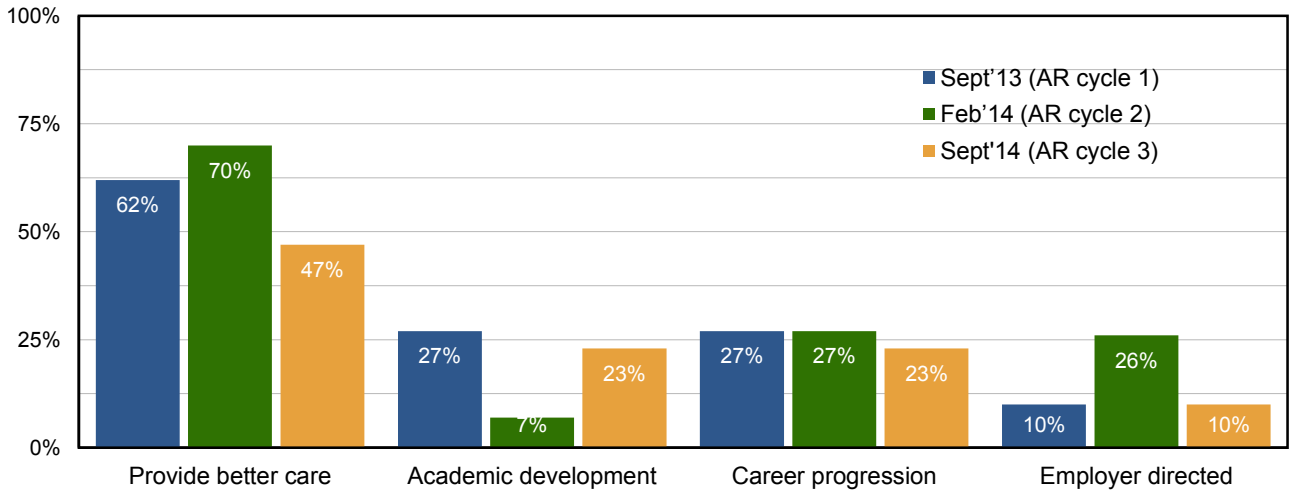

Figure 33. Thematic comparison between action research cycles 1–3

S14 pre-course comments: FG 1 (26/8/2014)

A18: 'To be a better critical care nurse, learn skills and help me become better.'

A14: 'I agree, to become better.'

A17: 'To provide the right patient care and know what I am doing.'

A15: 'Academic development. The opportunity wasn't there at my hospital, that was one of the reasons why I chose to come up here.'

A19: 'Improve practice…the knowledge underpinning practice, gives you confidence.'

Learning / outcomes

- S14 students all reported being self-motivated to attend the CCP, with the 10% who stated they were sent by their managers, expressing that given the choice, they would still have chosen to attend. The 16% reduction in 'employer directed' students may have

been because students commencing the CCP would now have been required to have completed 12 months' critical care experience and the step 1 competencies prior to admission, meaning they were already committed to working in critical care or simply a return to the earlier baseline rate.

- The desire to provide better care remained the primary motivation for attending the programme (reduced from 62-70%).
- It was noted that referral rates on first attempt were higher amongst graduates than those entering the programme with diplomas: F13 cohort: 22-29% (graduates) v 12% (diploma).

Actions / what did we want to learn?

- Were graduate students sufficiently motivated to apply the effort required to repeat success when repeating level 6 study? Were high academic referral rates due to a lack of motivation or intellectual ability? Explore these issues further in the final research cycle.

Q.2. How long have you worked within critical care?

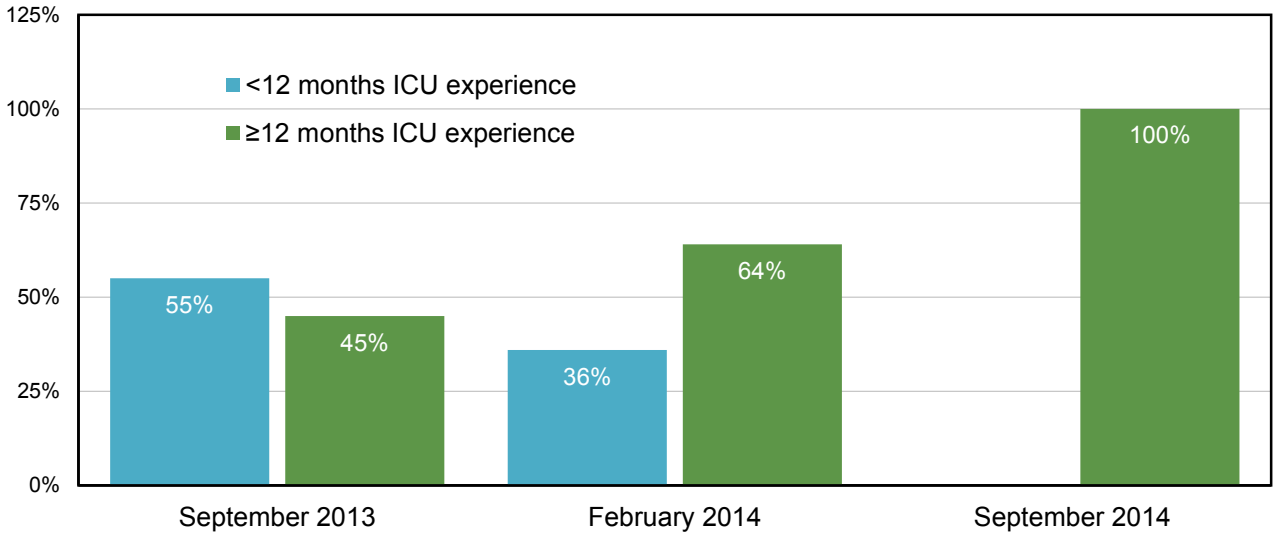

Figure 34. Range of pre-course critical care experience

S14 pre-course FG1 (26/8/2014):

A18: 'If you've had some prior experience elsewhere, then a year might not be too bad. But if you are newly qualified, I don't think a year's enough to get used to the area… at least 12 months.'

A15: 'There are a lot of newly qualifieds who started on the unit where I am, and they are happy that they won't go straight onto it…because it's such an intense environment.'

Learning / outcomes

- 100% of S14 students completed the stage 1 competencies and gained a minimum of 12 months' ICU experience (range: 1–13 years, mean = 2.7 years)
- Students agreed with minimum of 12 months' pre-course critical care experience.
- 29% were in favour of extending this period to 1.5–2 years.

Actions / what did we want to learn?

- Students were accessing the CCP with higher baseline knowledge / experience and as result their learning needs were becoming more advanced. The Programme Committee and Curriculum Working Group needed to consider how the curriculum should respond to this change. Continue to explore this issue with students.

Q.3. Were students aware of the National Standards for Critical Care Nurse Education (CC3N, 2011)?

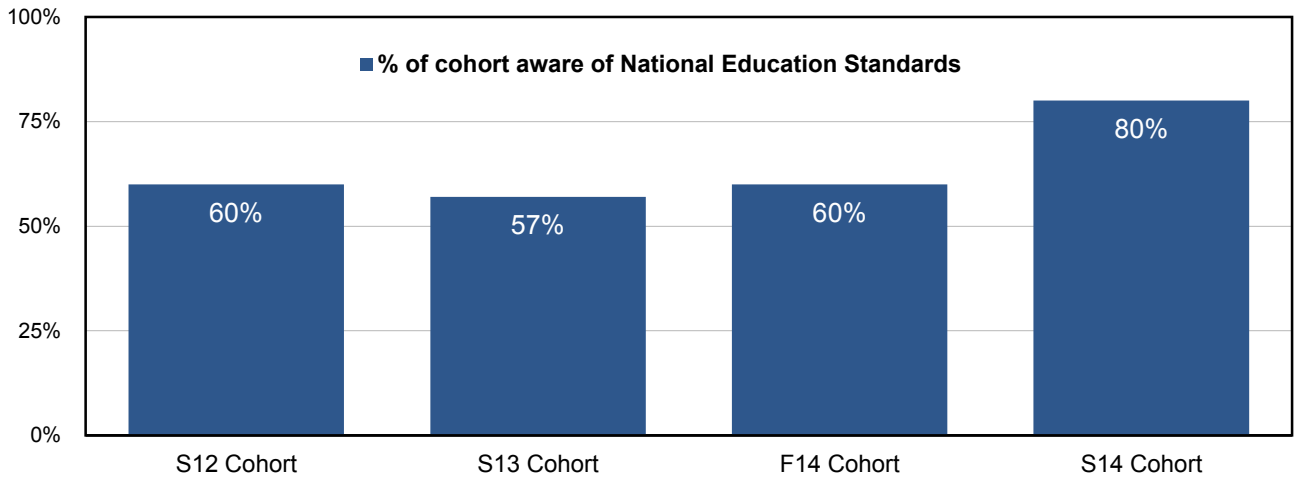

Figure 35. Change in student awareness of the National Education standards

S14 pre-course comments, FG1 (26/8/2014):
A14: '*It is good that there are national standards. You would not want to go through all the hard work only to find other places wouldn't accept that course.'*
A15: *'And that is the problem that I had. They had a course* [previous employer]*, and would help you do it, but at the end of the day it didn't count at all. This course transfers anywhere else in the country*.'

Learning / outcomes

• 80% of students now aware of the National Standards.

Students place a high value on a nationally recognised critical care nurse qualification.

- Issue resolved.

Q.4. NEW QUESTION. Were the writing assessments introduced as part of the course admission process useful for students?

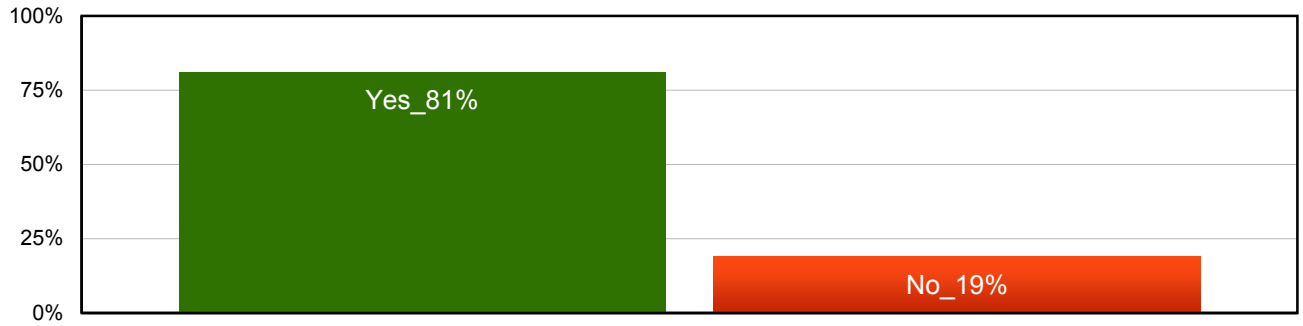

Figure 36. Did the students find the writing assessment useful? (Sept 2014 cohort)

Did the writing assessment help students to access the correct academic level?

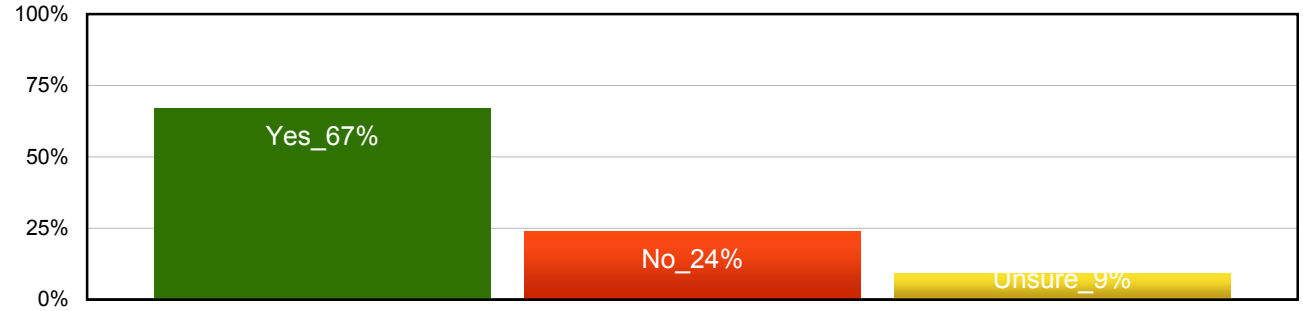

Figure 37. Did the writing assessment help students access the right level of study? (S14 cohort)

Positive:

'It gave me confidence and got me thinking again' (p.8), *'It allowed me to start thinking about academic writing and how I can improve'* (p.7).

Negative:

A15: 'I've got my degree, a 2:1. But I was told I couldn't write at level 6.'

A14: 'It was a bit similar for me. I got the article a week before and I had read it all, but I didn't really understand and what they were asking for' (Pre-course FG1, 26/8/2014).

Learning / outcomes

- Students expressed divergent opinions towards the use of a writing assessment, with continued frustration regarding access to master's study.
- The writing assessment was useful in engaging with students prior to enrolment regarding their current learning needs, particularly for those who had not undertaken academic study for many years or were considering making the transition to master's level.
- Feedback highlighted flaws with the reliability and validity of the writing assessment as a sole determinant of academic ability. The conclusion was that it should not be used to prevent students who have a proven academic record accessing study at master's level.

Actions / what did we want to learn?

- A minor modification clarified the master's entry criteria: 'students will *normally* have a minimum 2:1 award in their first degree'; nurses encouraged to share copies of previous writing to demonstrate their academic ability (Programme Committee, April 2015).
- Students meeting the criteria would access the CCP <u>without</u> a writing assessment.
- Evaluate this modification by examining its impact on master's level entry and student satisfaction. New question added to evaluate the fairness of the CCP admission process.

Q.5. Were students accessing the CCP at their preferred academic level?

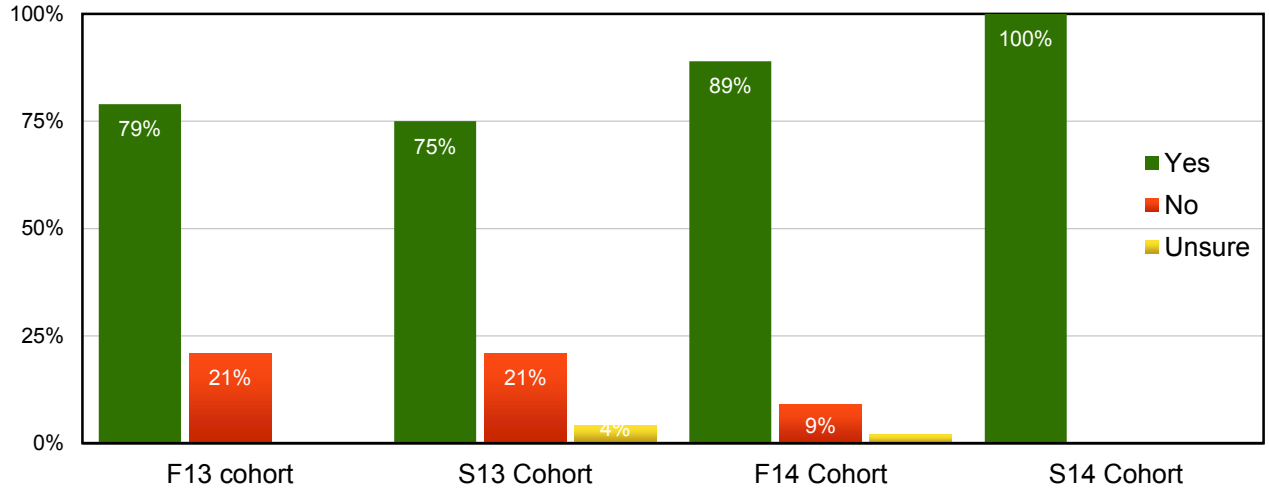

Figure 38. Did you access the CCP at your preferred academic level?

S14 pre-course comments (FG2, 26/8/2014) No negative student comments.

Number of master's level students per cohort:

Sept '12 = 1, Sept '13 = 3, F14 = 10, S14 = 6 (20% cohort)

Learning / outcomes

- The academic options met the learning needs of <u>all</u> S14 students commencing the CCP.
- The number of master's students reduced possibly as a result a tightening of access or misuse of the writing assessment, but an overall upward trend continued to be foreseen now nurse training was all graduate.
- Establishing a culture in which students were encouraged to achieve their educational potential was contentious. The data identified it as a principal concern for students who believed they possessed the ability to study at master's level. This created tensions with the more cautious approach from some PBEs, whose primary concern was to ensure workforce needs were met, with graduate level students seen as a safer bet for the perceived riskier jump to master's study.

Actions / what did we want to learn?

- Students meeting master's entry criteria would gain authorisation from their line manager to access at master's level study, reducing the tensions that were developing between the educators and students.
- Assignment briefs introduced clarifying the requirements of degree and master's study.
- Monitor the demand and uptake of master's students.

Q.6. What knowledge and skills did nurses expect to develop?

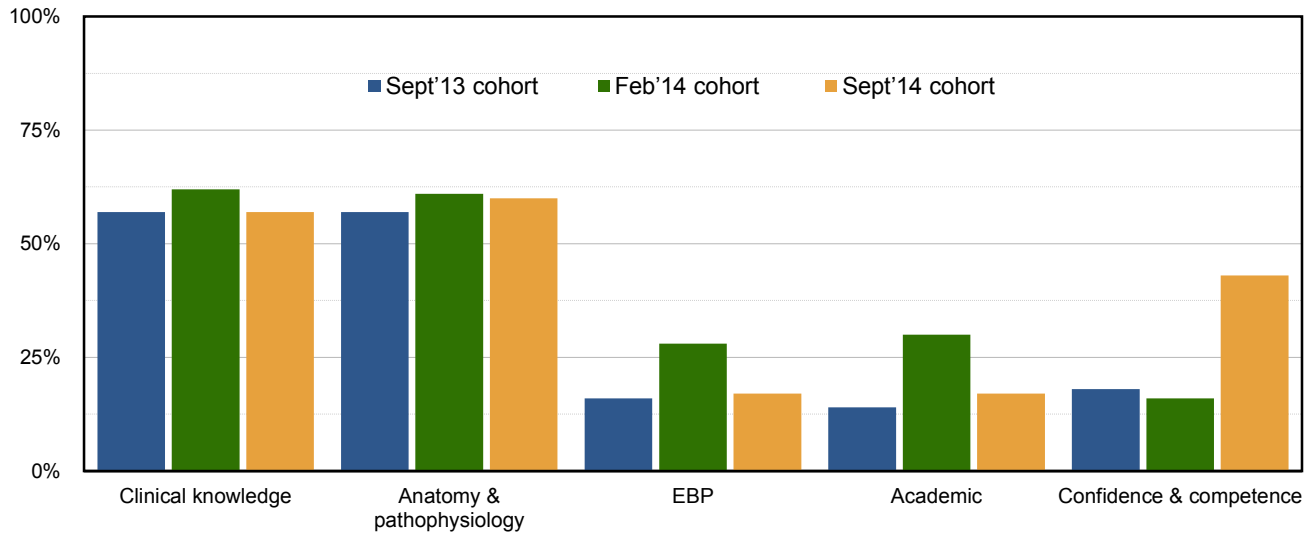

Figure 39. What knowledge and skills did nurses expect to develop?

S14 **pre-course** comments:

'More confidence and understand why we do certain things.'

'Improve clinical and academic confidence. Patient experience and outcomes will hopefully improve'.

'Contemporary research base to reinforce my practice.'

'Enhance my critical thinking, enabling me to question practice more efficiently.'

'Higher standard of academic writing and knowledge base, to aid my role.'

Learning / outcomes

- There was increased mention of themes relating to developing *clinical confidence* and *competence*. The clinically focused themes were consistent with earlier cohorts, with increased knowledge, specifically the desire to understand *altered physiology* in the critically ill, along with the *evidence base* underpinning *clinical decision making*.
- 55% (n=24) stated the CCP would positively impact their practice (NB only one thought it would have no impact).

Actions / what did we want to learn?

- Continue with planned changes to the study days, increasing the pathophysiology and EBT to support students' depth of 'knowing'; active learning strategies to close the theory-practice gap, using case studies to facilitate *critical thinking* / *clinical decision making*.
- Continue classroom observations to observe implementation and evaluate impact.

Q.6a. Are there any areas of learning where students require particular support?

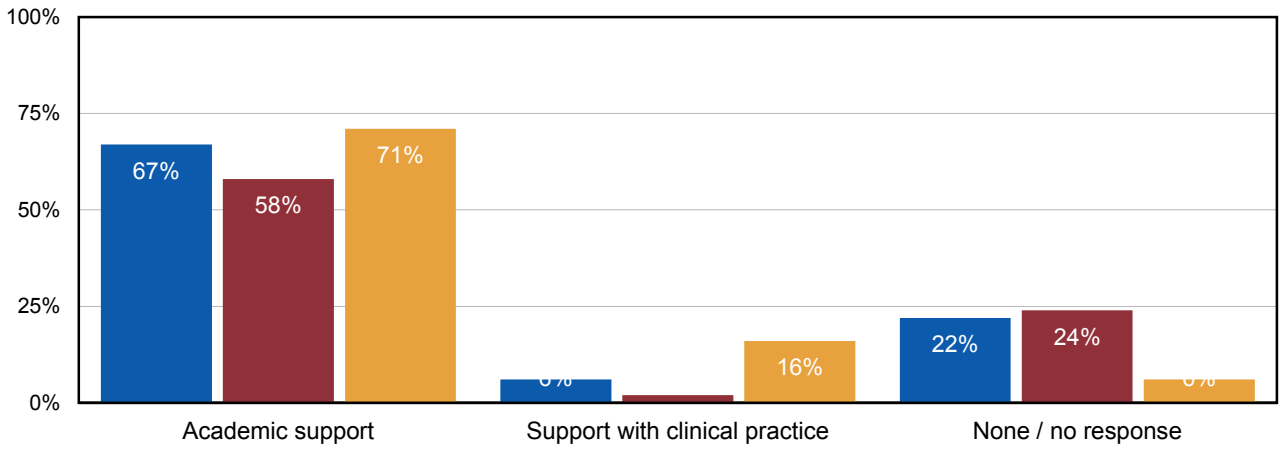

Figure 40. Pre-course self-assessment

Learning / outcomes

Academic support was consistently identified as the students' primary learning need, which is unsurprising given most nurses are not regularly involved in academic writing and presentations. Students preferred face-to-face tutorials or email (52%), rather than telephone (4%) or Skype (4%).

Actions / what did we want to learn?

- A clear strategy of academic support including: early student engagement with academic learning starting pre-course, with referral to a university learning support officer well utilised by students; personal academic mentors; and the introduction of formative assignments, with formal timetabled tutorials to provide written feedback.
- Student engagement and satisfaction with academic support to be evaluated in the next cycle, alongside the impact of formative assignments on academic performance.
- Interview referred students to explore reasons they were unsuccessful (F14, 3/6/2015).

Q.7. Did students achieve the knowledge and skills they expected to develop?

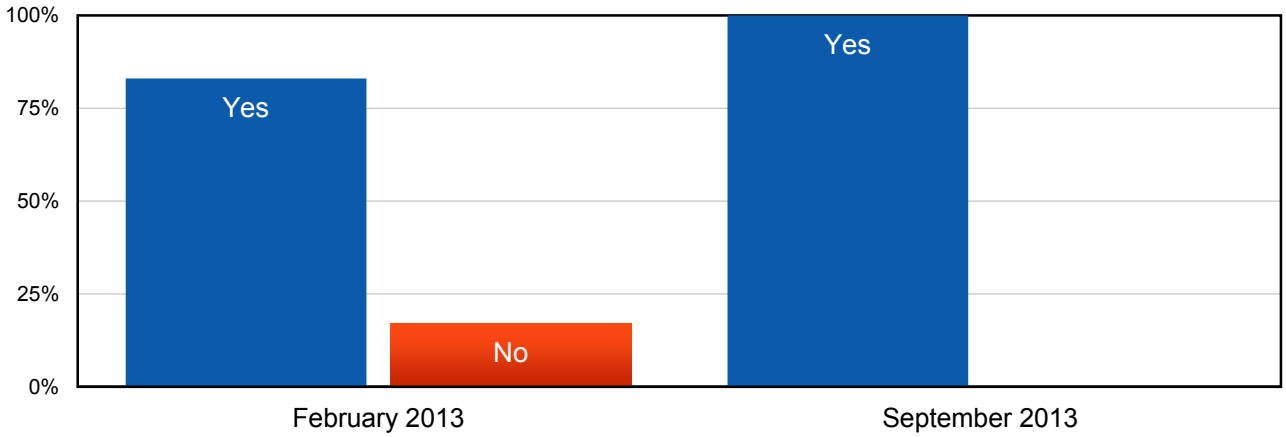

Figure 41. Did you achieve the knowledge and skills you expected to?

S13 **post-course** comments:

'Physiology of critical illness' (5 similar)*; 'Evidence-based research has influenced my practice'* (1 similar); *'Networking with staff from other units' (questionnaires).*

B5: 'It would be better if it [teaching] *dealt with situations that you see within ICU.'*
Moderator: 'You mean like case studies?'
B5: 'Yes, because we know the basics. We've worked in ICU for 12 to 18 months, so you know what a ventilator is and the different modes of ventilation, but if someone was asthmatic, then why are you treating him in that way?'
B6: 'They do help, the case studies, to relate more to your practice.'
B7: 'I would have liked to learn more on the physiological side of things…The study days were a little bit basic' (S13, FG 1, 28/8/2014).

Learning / outcomes

- The 100% statistic relating to knowledge and skill gain suggests the CCP met all the students' learning expectations. The validity of this statistic was weakened by S13 comments, with several criticisms relating to a lack of depth and range of coverage of critical illnesses, along with calls for more active learning including case studies.
- This feedback has added significance, given this cohort (S13) were relatively inexperienced (55% < 12 months' critical care experience), compared to the current intakes of students who have all worked within critical care for at least 12 months.

Actions / what did we want to learn?

- Focus upon teaching the altered physiology of common disorders, increasing the depth of this, reflecting the complex nature of critical illness.
- Introduce formative anatomy and physiology workbooks pre-course, making this knowledge an entry expectation, allowing classroom time to focus on altered physiology.

- Develop a mixture of basic and complex case studies representative of typical ICU patients with multi-organ failure, for use within some study days to challenge students, supporting applied higher order thinking and peer-to-peer learning.

Q.8. What do students perceive as the value of the academic study in the CCP?

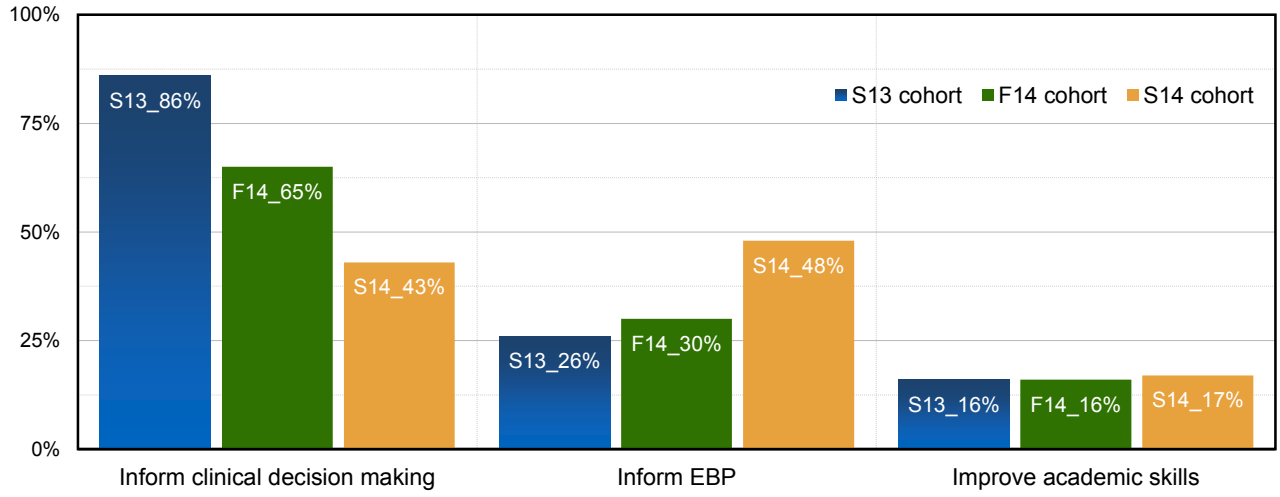

Figure 42. Pre-course students' views

S14 pre-course:

'Keep up with EBP' (x 13 similar) *'Develop critical analysis skills and journal searching skills… to improve best practice', 'To think more critically'.*

A15: 'It really helps…the academic side of it, the EBP is feeding into it all the way' (S14, FG1, 26/8/2014).

S13 post course:

'Question current practices and think how we can be better'.

'Evidence base to back up your decision making (x 2 similar), *'made my decision making stronger'* (x 2 similar).

Learning /outcomes

The dominant core themes of *evidence-based practice* informing *clinical decision making* reflect a consistent perception of academia informing clinical practice. The majority of students directly linked undertaking academic study with improving the quality of their nursing practice (86% S12 – 79% S13). The CCP had retained its clinical focus, which was the priority for students (and PBEs), with only 16-17% identifying linking undertaking academic study with improving their academic skills. This data illustrates the practical nature of nursing and the importance to critical care nurses in understanding the EBT that informs their clinical decision making. By contrast, the teaching materials remained insufficiently referenced to meet these expectations. The PBEs and managers concluded that a robust evidence base had become a requisite feature of contemporary critical care higher education.

Actions / what did we want to learn?

- All study day materials to be fully referenced with EBT by September 2014.
- Case studies to facilitate students' application of this knowledge and EBT to their clinical reasoning and decision making.
- Evaluate whether academic study was influencing students' clinical decision making, and if so, in what ways?

Q.9. NEW QUESTIONS: Were the study days useful in:

1. **Developing your clinical practice? 96% Yes**
2. **Helping with your academic assignments? 74% Yes 22% No**

S13 post-course comments:

'They could have been in more depth, there wasn't much difference from ACU.'

'Some were aimed at the wrong level…students rather than qualified staff.'

B4: 'I think some of them [study days] *were really basic.'*
B7: With the case studies at times, say on the cardiovascular study day, you know what's wrong with your patient. It would have been useful to have a case study not on a specific organ…because we would have to think more' (FG1, 28/8/14).

Moderator: '*We are introducing case studies. These will provide a patient introduction, including their signs and symptoms, and ask you what is going on with pathophysiology.'*
B8: 'That would be really good, I'd love to do something like that.'
B11: 'That will get you to use your brain.'
B8: 'Linking it more to the assignments… I quite like that;' 'I don't feel the study days played a part with the academic assignment'; 'not interlinked well', 'the assignment was separate to the study days' (FG2, 29/8/14).

Learning / outcomes

The 96% 'yes' response indicated the CCP had retained its core function in developing the applied knowledge and skills of critical care nurses. The 22% who responded that the study days were not helpful with their academic assignments, described a curriculum where clinical and academic components remained distinct. Eighteen months into this two-year

study, and the changes made to rectify this (case studies, strengthening of EBT, timetabled personal tutorials to review formative work) had not been made in time to benefit these students.

Secondly, students repeatedly stated teaching was pitched at too basic a clinical level. Case studies were unrealistic because they were based upon single organ failure, when critically ill patients typically have complex multi-organ failure; and they needed to become an integral learning strategy, rather than a 'bolt on' quick discussion near the end of the day.

Actions / what did we want to learn?

- Introduce sequential complex case histories aligned to clinical practice and the assignment by September 2014 (Programme Committee, April, 2014).
- **KEY ACTION**: Educators began a formal peer review process for all the study days (Curriculum Working Group, October 2014). This high impact intervention provided a forum for enthusiastic and innovative educators to share achievements, providing some excellent examples of case studies or integration of EBT, which had been positively evaluated by students. This moved ownership and responsibility for improving the quality of materials directly to the educators, who were required over the next six months to present their study day materials to their peers. The rationale informing this approach is discussed at the end of this section.

Q.10. Is the course developing good critical care nurses who are fit to practice?

a. Has attending this course made you a better critical care nurse? (S13)

0 – 1 – 2 – 3 – **4** - 5 (**mean 4.0,** range 2-5) (n=31/37**)**

('0' indicating no improvement and 5 indicating a very high level of improvement)

Tell us if or in what ways the course has developed you as a critical care nurse?

B6: 'Confidence, being able to say to the doctor, I'm not happy with this patient, I want you to review this, and understand why things are happening.'

B7: 'You have a better background knowledge of the patient, knowing what you need to monitor, what's most important and what to look out for.'

B4: 'It is the altered anatomy and physiology which makes things clearer' (FG1).

NB Students scoring only 2–3/5 *wanted a more in-depth critical care course* (n=3), or cited a poor level of mentor support in practice (n=2). No comment (n=17)

b. Has attending this course improved your confidence as a critical care nurse?

0 – 1 – 2 – 3 – **4** - 5 (**mean = 3.9,** range 2-5**) (29/34 students)**

('0' indicating no improvement and 5 indicating a very high level of improvement)

'*Knowledge has increased my confidence.'* 3 comments related to the lack of mentorship in work. No comment (n=15) (65%).

Learning /outcomes

Self-ratings increased nominally over the last six months from 3.8 to 4 in question 'a', and overall learner confidence remained unchanged, making it difficult to infer any attributable improvements in these areas. The core themes of underpinning knowledge, including understanding of *altered physiology and* core critical care knowledge remained. There were mixed views upon whether the content of the CCP was taught to a sufficient clinical depth.

Actions / what did we want to learn?

- Continue to evaluate the confidence levels of critical care nurses.
- How does critical care education (including assessment within practice) contribute to the development of nurses' confidence and competence (see responses to next question)?

Q11. What has been your experience in relation to the assessment of your competencies within practice?

S13 post-course comments: positive = 7, negative = 12, none = 3

'Worked frequently with my educator and this has been very beneficial' (p.15).

'Unsure whether I am actually being assessed or just signed off'' (p.11); *'Extremely poor support, no time to undertake, no insight on need to prioritise, no time given'* (p.16).

Learning / outcomes

The level of student engagement with this question indicated this was an important topic for students, who consistently raised concerns over access to mentors and the robustness of competency assessment. This was not across all clinical units, with many students reporting good support, but it was a significant issue given half the S13 focus group reported dissatisfaction with their mentorship. This focus group provided tentative reassurance as to the overall quality of this process, *with all agreeing the assessment of their competencies had been fair*. This was important, because as participant 11 infers, much of their confidence in their clinical competence was derived from the integrity and robustness of the competency assessment process.

Actions / what did we want to learn?

- Feedback comments to the PBEs and lead nurses.
- Continue mentor updates and bi-annual audits of clinical placements.
- Repeat question in next cycle to evaluate the impact of these interventions.

Q.12. Are there any changes you feel would improve the Critical Care Programme?

S13: *'The acute and critical care modules felt the same…would have enjoyed the critical care at a more in-depth level'; 'More on critical care issues'.*

Learning / outcomes

The 12-month pre-course critical care experience requirement resulted in more knowledgeable students and subsequently the curriculum was now too basic. The acute care unit was no longer appropriate for these students, and it was agreed that it should no longer be part of the CCP. The inclusion of acute care reduced the opportunities to focus on the complexity of illness and specific professional nursing issues involved when caring for critically ill patients and their relatives.

Actions

- Develop case studies that accurately and realistically reflect the complex demands of providing nursing care to critically ill patients and their families.
- Explore the development of a new CCP, with a separate acute care unit at the Programme Committee and Curriculum Working Group.

Student academic performance (February 2012–September 2014)

Student referral rates at 18 months into the study remained unchanged or increased in both academic units, with any learning or interventions not yet yielding improvements in academic performance.

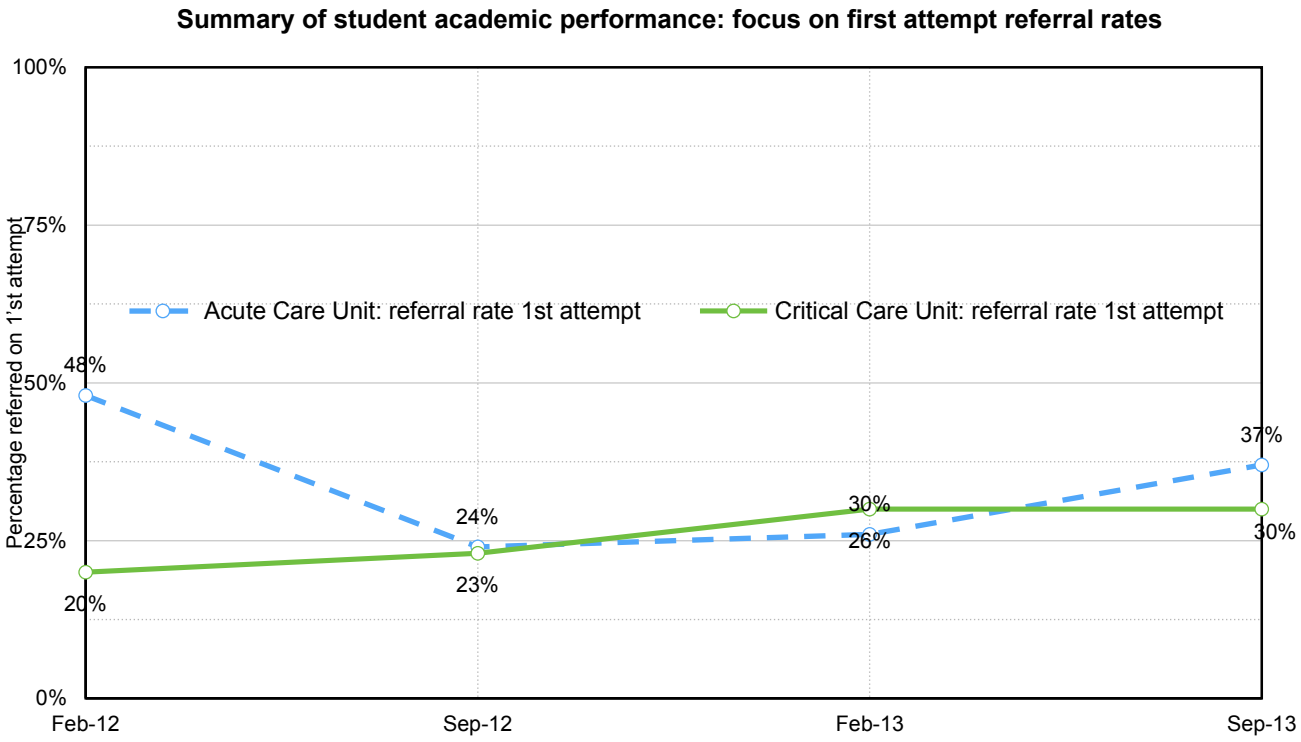

Figure 43. Student cohort results. Period February 2012–September 2014

Discussion and Learning: End of Third Research Cycle

Changing educational practice is a slow transition

The interventions made in the first three cycles of action research, such as tightening the entry requirements; the transition towards underpinning materials with EBT; a constructivist, patient-centred teaching strategy utilising case studies; and formative assignments, all required time to be implemented and take effect before their value could be properly evaluated. In addition to material change, achieving the cultural change required to deliver these fully across the CCP was extremely challenging within the democratic covenant of participatory action research. The slow pace of change, combined with the paucity of sustained improvement in student performance was extremely concerning at this stage. The second cycle of the classroom observations was yielding disappointing results with partial or no improvement in the level of EBT or teaching strategy in some study days despite guidance and feedback.

The lack of progress resulted in feelings of anger that the educators were not delivering the agreed changes. The detailed written feedback for each study day observation was shared only with the educators, with general themes communicated to the Curriculum Working Group. This created an ethical dilemma, with a temptation to share the classroom observations with managers so that they could hold the educators to account. This was discussed at MMU with the research lead for ethics and it was agreed that sharing this information with management was unethical because it would betray the educators' trust; had a potential to be maleficent, and was fundamentally contrary to the collectivist democratic principles of action research (Kemmis et al., 2014). There was a realisation that the educational journey may extend beyond the timeframe of the study, and that this was

part of the learning process. Kemmis et al. (2014) support the use of classroom observations in educational action research because the feedback allows educators to reflect on their practice and agree future changes. The problem was not the observational research tool, but that the speed and degree of the change was insufficient to meet changing student needs within the study timeframe.

These tensions were reflective of the multiplicity of my role. As lead university link lecturer, there was the responsibility for ensuring programme quality and responding to student feedback. As a nurse educator, I have professional responsibilities for ensuring materials are evidence based and support high quality nursing practice. These responsibilities were balanced against my role in participatory action research, a social process which was largely dependent on the good will, support and enthusiasm of the educators to make these changes to their teaching practice. These tensions created frustration and raised questions regarding whether my personality was unsuited to this methodology because my nature was too controlling. Yet, how can action research succeed without action? After eighteen months of the research we had completed three cycles and the study was losing momentum. In hindsight this was foreseeable, as Kemmis et al. (2014) advised novice researchers that using cycles longer than one month's duration would likely lead to members of the group becoming disengaged. The answer to restoring the studies momentum was complex.

Biesta (2007) argued that attempts to prescribe defined teaching methods of teaching such as the use of case studies or insisting on defined norms of evidence-based content is undemocratic. He warned against adopting a 'cookbook' approach, predicting this would not reliably result in educational improvements, advising instead that educators should be supported to retain their professional judgement in deciding what works. This point

resonated, and was very useful at this stage of the research in providing a more comfortable epistemological researcher stance. Clear strategic direction was provided by the Programme Committee, leaving teachers the autonomy to develop their individual teaching and shared teaching practice. The collectivist practice of sharing the content of each study with peers empowered the educators to learn from each other and make changes because they shared and learnt from each other's best practice; and where necessary, were held to account by their peers.

Changing ontological stance?

This generates a wider debate in education regarding what construes evidence and who decides its value? The 'researcher' perspective felt at ease with a laissez-faire ethnographic role, maintaining an impartial observer role within social research. The role as university lead for the programme sought more control, prescribing agreed solutions, and observing whether these have been delivered in the classroom. Biesta (2007) calls for patience; and Kemmis et al. (2014) are unequivocal that action research is not individualistic. This guidance from action research literature was significant because it provided a warning not to become an isolated research figure, an outsider who was engaged in research on, rather than with colleagues. It provided a timely reminder of the necessity for a collectivist approach in participatory action research, engaging, listening and learning together.

Ecologies of practice

Kemmis et al.'s (2014a) description of the 'ecologies' and 'architectures of practice' provided reassurance because of their emphasis on the depth of change that was involved to transition a clinical training institution to a higher education provider. Kemmis et al.'s terminology is useful because they convey the idea of the MCCC as a living ecology,

composed of individuals (educators, managers and students) who share common practices, social spaces, beliefs, learned behaviours and language. These were ingrained into the teaching materials and priorities, which at times appeared foreign to higher education.

In this context, the introduction and validation of the collaborative CCP in 2011 was a superficial administrative exercise, which did not extend into the classroom or to the existent ecology. This research created insight into the depth and complexity of established educational cultures; providing a platform for shared reflection and new perspectives, which contributed to the evolution of a new ecology and architecture.

Kemmis et al. (2014a) warn that achieving educational improvement at classroom and organisational level was likely to be a slow ‘struggle’, a ‘long haul’, which required sustained commitment and patience. Change, they argue is a slow transition, not an event. They were right. If you gather compelling evidence that teaching practice requires changing, you still need to persuade people to change their established way of doing things. There a realisation that becoming overly prescriptive likely generates increased resistance and resentment. This is supported by Kemmis et al. (2014a), who recognised that major change cannot be imposed on people without paying a heavy price, in my ongoing relationship as a researcher with these colleagues.

An autocratic position was unethical and contrary to the social spirit of participatory action research for several reasons. On a pragmatic level, it was imperative to maintain a supportive ‘willing coalition’ during this transition (Kotter, 1996). Ethically, the changes affected highly educated professionals, who required the opportunity to contribute and exert a level of control over change, rather than having it enforced upon them. At this point, we were not at the same point in the journey, but the aim was still to empower the educators to

become enthusiastic agents of change. The views of Kemmis et al. (2014a) softened my ontological stance by easing my frustration with myself and others at the lack of progress by providing a clear reminder of the scale of the challenge and the merits of retaining a democratic pluralistic approach.

More of the same was not an option at this stage; major improvements were required to improve the general quality of the CCP and improve student academic performance. The gradual process of stirring in new practices described by Kemmis et al. (2014a:58) and illustrated below provides an evocative image reflecting the processes requiring consideration when managing educational change.

Stirring in Practices

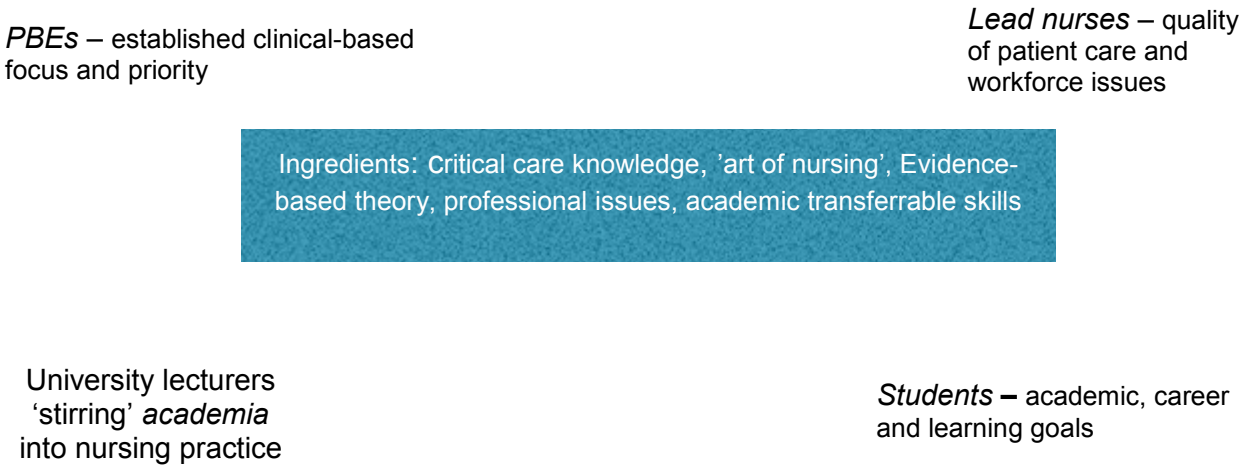

Figure 44. Learning as being stirring theory into practice adapted from Kemmis et al. (2014a)

The research produced new insights by collating and sharing the thoughts of all parties to develop collective knowledge of the key issues (the ingredients), which required collective

agreement and action. One such insight that persuaded the educators of the need to improve the presence of EBT arose from a focus group with students completing the CCP in August 2014, who expressed that they considered the presence of evidence-based theory as *'essential'*, '*because it reassures you that you are doing the right thing. It's a way of justifying what you do'* (S13, FG, August, 2014).

After the results of the third cycle of action research were shared with the educators there was agreement that the lead PBE for each study day would share their revised materials with the Curriculum Working Group, which proved transformative (see results from classroom observations in the next cycle of results). It resulted in collective appraisal of the materials, decision making, peer pressure and collective responsibility for quality assurance. Local ownership proved the missing catalyst because the precise ingredients and the vigour with which they stirred would decide the look and feel of the revised CCP.

Summaries of the Curriculum Working Group meetings below illustrate this 'stirring in process' in action:

- October (2014). The results from the first three classroom observations performed as part of the second cycle of observations were shared. Changes, in adding clearly referenced EBT to presentations alongside complex studies, were not to the agreed standard or simply absent. An example of a university master's level lecture was shared to establish a mutual understanding of the expected academic standard at degree and master's level. The educators who delivered the cardiovascular day shared that they felt using a case study as a thread throughout the day had improved their teaching and the learning

experience. This allowed them to share their success and explain to the other educators why it had been effective.

- December (2014). PBEs educators were at first reluctant to share the contents of their study day, but were persuaded to do so by their peers. It transpired that the materials contained no evidence base or references. This process allowed the educators to see the contents of other days and in the light of the model presentation gain a clearer grasp of the scale of the change required. It highlighted that agreed changes were being inconsistently implemented.
- The Working Group would assume this quality assurance function. This process allowed the educators to become familiar with the content of all the study days and share best practice.
- November (2014). A further study day was presented and agreed changes included inviting a dietician to provide a multi-professional approach. This was learning by doing, a process of critical group reflection, sharing what works and what does not. It was a process of educational democracy that overcame the individual intransigence of some educators.

Shifting sands

The feedback from the study observations cemented the view that the CCP was no longer fit for purpose. The curriculum was developed in response to the wider vision of critical care described in Comprehensive Critical care (DH, 2000), which reduced the boundaries between critical care and the rest of the hospital. The term ‘critical care’ became a broader reference point than the traditional ICU and HDU areas, representing an inclusive approach to service delivery based upon patient need, rather than location.

The CCP was developed within this context to share specialist expertise with nursing staff from acute and critical care areas. The educational legacy was a programme that did not meet the specialist needs of acute care nurses, omitting content such as recognition and management of acute illness, including anaphylaxis, common medications, or hypoglycaemia management. Neither was it still meeting the needs of these more experienced nurses caring for critically ill patients, as illustrated by the comments of some S13 students on completion of the programme who described the teaching content in terms of being 'oversimplified' (B73) and '*quite patronising in terms of the knowledge base you are assumed to have, which was that we didn't have any'* (B74, FG, 29/8/14). An example of this was the respiratory study day, which was delivered over three days: basic, intermediate and finally, during the latter part of the programme, an advanced day, which was the first time the care of ventilated patients is considered (Note patients in intensive care are ventilated).

The term 'critical care' may offer inclusivity, but as Fulbrook (2010) notes, it has been problematic for critical care education because in trying to represent the needs of many, it fails to provide a range and depth of professional knowledge that is relevant to all parties. Fulbrook (2010) noted that physicians rarely use the term critical care to describe their organisations, preferring 'intensive care', as a more precise description. This conclusion was supported by feedback from students, particularly during the second and third research cycles, who possessed greater critical care experience and consistently described the content as too basic and repetitive. Nurses who are experienced critical care practitioners understandably expressed the desire to understand the physiology of critical, rather than acute illness, wanting to build upon their existing knowledge and experience to learn how to better care for patients with complex critical illness.

Changing student demographics was also having an impact. The percentage of graduates commencing the programme increased from 30% in 2011 to 50% by 2014, with the more academically able wanting to study at master's level. Statistically 1 in 60 nurses studied the CCP at master's level in September 2011, rising to 1 in 5 by September 2014. A significant number of these students (9-20%) felt they were prevented from accessing master's study because their academic ability was risk assessed against the need to ensure they successfully completed the CCP, and satisfy workforce needs. This is understandable, but is contrary to the students' aspirations, given the demand within the NHS for increasing levels of educational attainment to achieve career progression. It balanced the needs of the employers against the educational aspirations of the individual; and for an increasing number of students it was a key issue.

A core purpose of education is to enable a society to replicate itself, to prepare the next generation to continue the development of knowledge, values and beliefs (Kemmis et al., 2014a; Matheson, 2014). The purpose of the original programme in 2001 was to develop clinically competent nurses; a separation from academia that addressed workforce needs, but was at odds with the wider societal and professional transition towards higher educational attainment. The rapid increase in master's students exposed academic frailties in the CCP with 50% F14 master's students referred in their ACU assignment. This high referral rate overshadowed what would have been the first sign of significant improvement, with first referral rates for degree students reducing significantly from 30 to 20%.

The higher referral rate at master's level reflected a lack of clarity and understanding amongst all of the team (including academics) of the distinctions between studying critical care nursing at degree and master's level. The course was designed primarily for graduate

nurses, not the wider more expansive (Cotterill-Walker, 2012) creative characteristics (Watkins, 2011) of master's study. The systems approach: respiratory, renal and cardiovascular reflected a historically narrow, medically orientated and fragmented approach. It did not explore important considerations that experienced critical care nurses need to contemplate, such as the overall mortality risk of their patients, which informs a balanced perspective required when planning care across the critical care unit and communicating with relatives or other members of the clinical team. Secondly, there was no provision in the curriculum to consider contemporary professional or political issues, which specifically related to the provision of nursing within this speciality; factors which contribute to the leadership level of comprehension, which form part of master's level study (Watkins, 2011; Cotterill-Walker, 2012).

These insights resulted in consensus that a new CCP was required to meet the specialised learning needs of nurses working in an intensive and high dependency environment (CIP, April 2015). The growing number of master's students meant that the existing assessments were not well suited to the expansive and innovative learning outcomes at this level. This insight generated consideration of new ways of assessment that would impact on practice, with agreement for a poster presentation, evaluating a chosen area of nursing practice followed by oral questioning. This approach would allow students to apply their academic research and intellectual evaluative skills to investigating an area of practice and making recommendations for potential change. The poster format aligned the curriculum to supporting the academic and clinical developmental learning needs, whilst providing something tangible to display within the MCCC, their workplace or at conference.

The learning arising from the third action research cycle was significant personally, providing a much deeper understanding of the challenges of aligning the CCP curriculum to meet the needs of an increasingly well-educated nursing workforce. The findings had highlighted the students' desire to better understand the altered physiology of critical illness; the EBT underpinning practice; be more actively involved in constructing their learning; and increasingly to further their academic development to master's level. The sands were shifting and the CCP, along with the educators who delivered it were collectively beginning to respond to these changing consumer needs. Local ownership in meeting these challenges was essential for the transition to succeed within the timescale of this study. This was not going to be a quick fix, given that only one third of the educators possessed master's qualifications, and the increasing academic standard of the CCP may have seemed threatening to those without such a qualification. This is significant because the educational experience and academic attainment of the faculty would influence their pedagogical approach to teaching and their ability to support the increasing number of master's students. The awareness of changing student demographics meant that it became a strategic priority to ensure that going forward, sufficient educators gained master's qualifications.

Nurse education had moved on and the 'ecologies of practices' and 'architecture' (Kemmis et al., 2014a) at the MCCC now needed to respond. The educators needed to achieve this academic standard themselves if they were to understand the demands of this higher academic level. If the educators have not lived the master's education experience, they would not be able to, or be permitted by MMU, to support these students.

Formative assignments

Academic assignments were consistently cited by students as the primary aspect of the course where they felt they required the most learning support. The introduction of formative assignments provided students with the opportunity to practise and receive feedback on their academic assignment prior to submitting their final version. The aim was to increase the level of student engagement with academic support and improve the quality of final submissions. A focus group with the F14 cohort students who had been referred in their written assignment (n=8, 3/6/2015), identified low levels of student engagement, with seven out of eight stating their referral was due to a lack of effort and 25% acknowledging that they had not accessed support from their academic tutor.

Current literature moves away from the view of adult students as passive recipients of education towards a social-constructivist approach (Williams, 2000; Barak et al., 2007; Biggs and Tang, 2011; Jones, 2012). In this teaching pedagogy, students learn through tasks designed to engage with and help them develop their understanding of what is expected. The provision of prompt formative feedback at the draft stage has been reported to help students engage with tutor support in a timely positive manner, which encourages them to improve their academic skills (Sadler 1998; O'Donovan et al., 2008; Shute, 2008; Court, 2013). Conversely, Crisp (2007) reported that formative feedback had not led to significant improvements in students' marks; and Courts (2013) acknowledged that while the more able students in her study benefited, some students reported the drafting process was time consuming and could even have an overall deleterious effect. A different perspective was provided by one student who strongly favoured the introduction of formative assignments, stating '*it would be good for me'* because she was dyslexic, and lacked confidence in her academic ability, feeling this would help her to gain confidence.

In summary, formative exercises are useful because they positively engage students of all levels of academic ability in the development of their academic skills. The formative assignments needed to be relevant to the final summative output and timely if students were to be motivated to apply the additional effort involved (particularly given these students work full time). The formative assignments were therefore designed to address the first two criteria of their summative assignments, with the formative submission set at the midpoint in each unit. The level of student engagement with this process, their views on the value of this intervention and the impact upon student academic performance was evaluated during the fourth research cycle.

What did we still need to learn?

- Was the curriculum now better aligned to meet the needs of students?
- Was there evidence that the changes, in terms of teaching style and EBT, and use of case studies were impacting clinical practice? (Were we closing the theory-practice gap?)
- Are the changes to the CCP reflected by an increase in the confidence of critical care nurses in their clinical practice?
- What was the impact of the formative assignments on academic performance?
- What have the PBEs and managers at the MCCC learnt from participating in this study?
- Had it changed their teaching practice / values/ beliefs?
- Had repeating the focus groups with these stakeholders provided an opportunity to analyse if the ecology of practice at the MCCC had changed?

Classroom Observations

This section presents the results from the second set of classroom observations, and provides an overview of the findings that emerged during the two years of the study. Figures 45–47 illustrate the pattern and progress in realigning the study days to the curriculum learning outcomes over the two years of the study.

A 0–30 scale used to record the level of curriculum alignment was useful in representing the data (figure 45), but required adjustment during subsequent analysis.

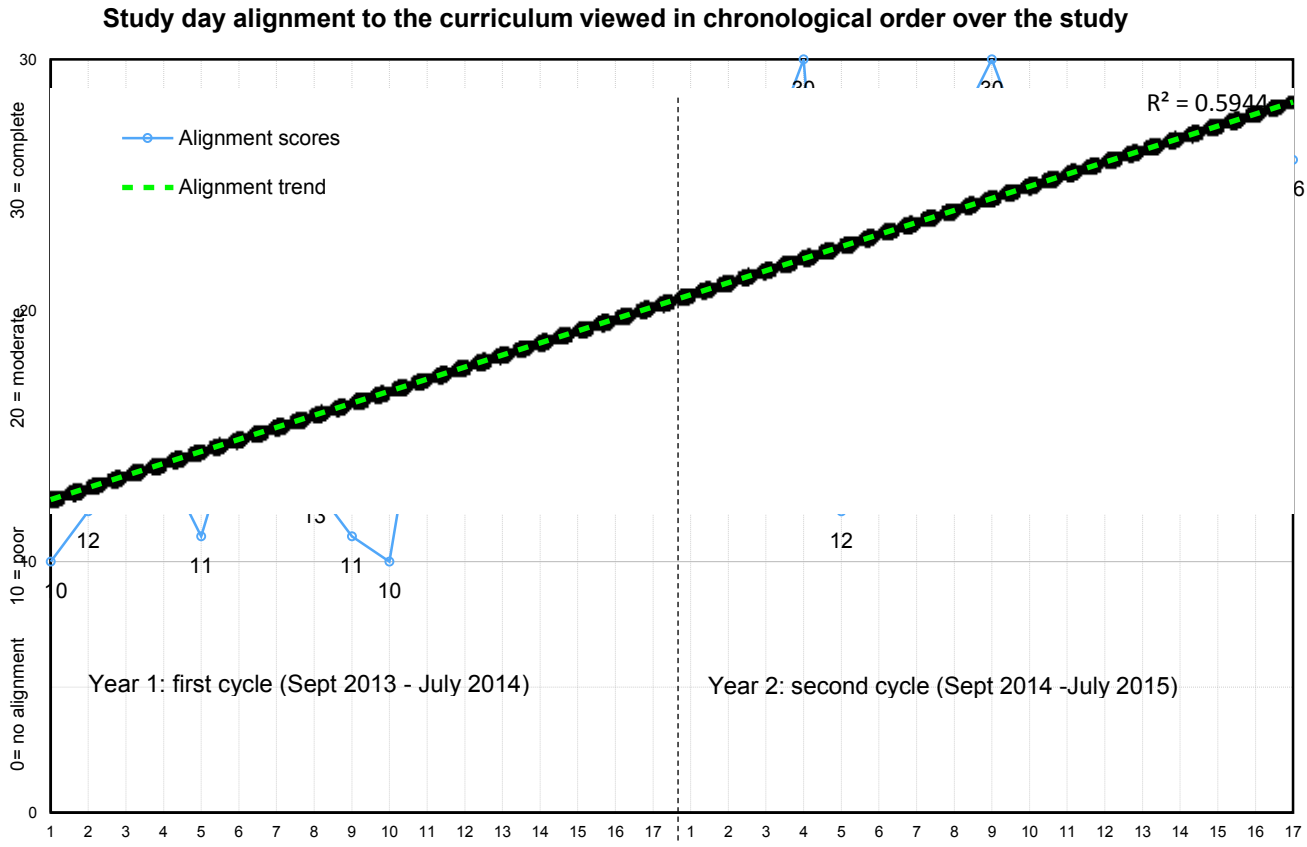

Figure 45. Acute and critical care study days observed and re-observed

Three study days (15, 16, 17) did not include ‘pathophysiology’, reducing the maximum score achievable from 30 to 27. For example, the final study day (17) scored 26/27 points, which was not represented using the 0–30 scale. To correct this, the study day total scores were converted to the percentages in figure 46, providing a more accurate picture of alignment.

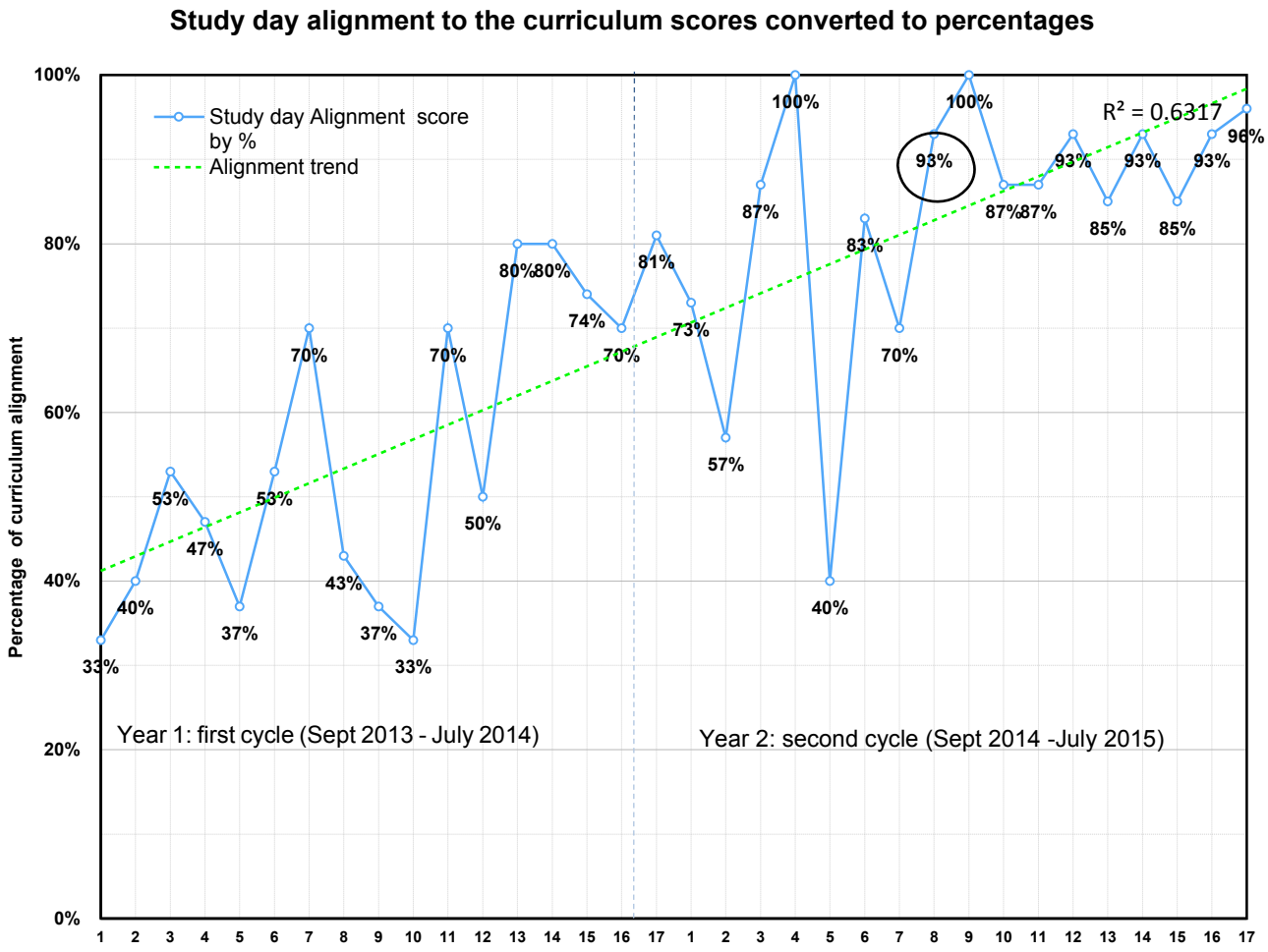

Figure 46. Acute and critical care study days (1–17). Observed and re-observed

Figures 45 and 46 illustrate an initial poor level of curriculum realignment during the first set of classroom observations, which continued into the second set. In this period, the

feedback was provided directly to the educators who delivered each study day, with the degree of change dependent upon them. The trend line demonstrates graduated improvement with the R^2 indicating only a third of the variability could have been to chance. This improvement was tempered by a high level of inconsistency, as some educators embraced feedback, whilst others were passive resisters.

This practice continued until the circled study day, which represented a clear tipping point (circled in figure 46), representing the start of period March–July 2015, where there is evidence of consistent rapid realignment, with an R^2 of 0.0003, demonstrating near zero probability of this realignment being due to chance. This is when the PBEs began presenting their revised study day materials to their peers for approval. This empowered the educators, allowing them to learn from each other and gain a perspective beyond the confines of their own study day and enabled control over redesigning the programme. This peer review quality assurance process represented a more democratic approach, with the PBEs taking responsibility for 'stirring in practices'. This transferred ownership for the change to the educator team, increased transparency and resulted in rapid and consistent pattern of realignment to improve EBT and adoption of agreed teaching strategies, including case studies and critical discussion. The 'resister' educators were willing to listen and act upon the views of their colleagues, in a way that they had not been to do with an academic, a relative outsider.

What changed in the classroom?

There was transformation both in the quality of the teaching materials, teaching strategies and a refocusing of the content towards core professional nursing issues, the patient and their relatives. The number of study day teams deciding to develop and utilise case studies

increased from six to nine by the end of the study. The case histories evolved from five-minute question and answer exercises to central threads weaving through many of the study days. The dynamic and complex characteristic of this teaching method challenged the knowledge of increasingly experienced critical care nurses, engaging them in long periods of critical discussion. This linked technical medical critical care theory back to the key focus of providing patient-centred professional nursing care to critically ill patients. The overall impact of the observations and action research process in realigning classroom discussions towards key areas such as pathophysiology, critical analysis of EBT and core nursing issues can be seen in figure 47 below.

The ACU mean scores represent observed study day scores for each of the key characteristics during the first six months of the study, which can be compared to the CCU scores during the final six-month cycle. This chart illustrates the extent to which to the curriculum was realigned to core themes of the programme over two years of the study. The qualitative evidence is supported by exerts derived from the observers, PBEs, and student feedback. There is some natural thematic overlap.

1. ***Learner engagement increased to full alignment*** as group discussions relating to case studies placed the educators in a more facilitative role, and engaged learners actively in constructing learning. The holistic patient histories used pseudo family photos to form central threads, unwinding as the study day progressed. Students worked through complex evolving scenarios, working with their peers to make clinical decisions, before sharing these with the rest of the group. In the F14 and S14 cohorts, 19/43 students identified case studies as a teaching method that had helped to develop their *critical thinking skills*, along with the use of simulation (n=21) and discussions (n=11).

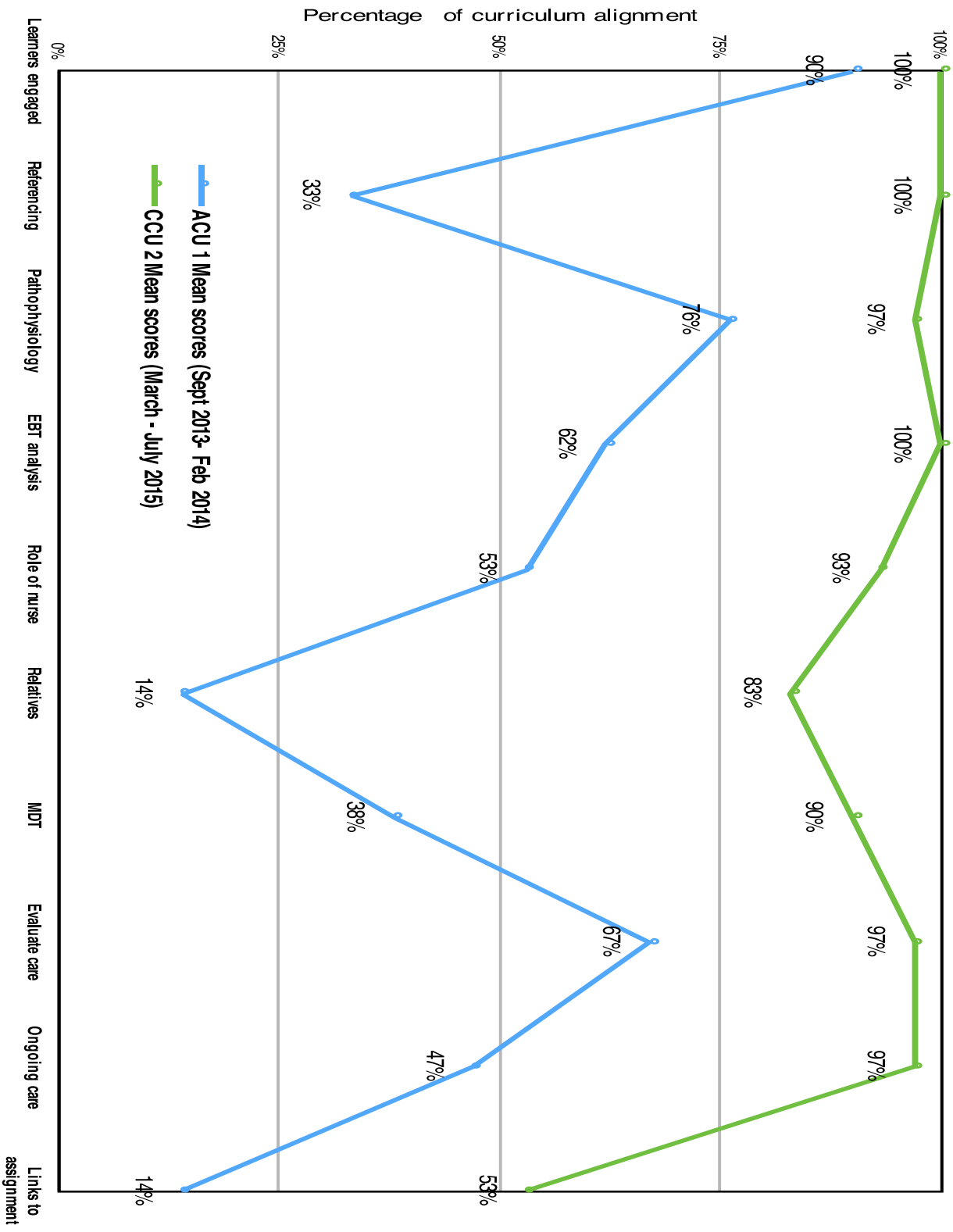

Figure 47. Curriculum alignment to core themes: first and last six months of the study

Observer feedback:

The initial evaluation that *'student participation was limited…students were not required to reflect or participate and that materials were unreferenced'* (Nutrition, 7/1/2014) changed to '*An enjoyable evidence-based review of the nutritional needs and care of patients in ICU'* (Nutrition, 2/5/15)*; 'Teaching linked very clearly to clinical practice using case studies. Four case histories were divided between 4 groups of students. These unravelled during the day, with students asked to apply their learning to plan the care of these patients as the day progressed…Teaching methods have moved to active learner format… linking theory directly to practice, providing opportunities for critical thinking, peer-to-peer discussion, sharing tacit knowledge, leading to decision making throughout* (Respiratory, 17/3/2015)*; 'A team approach to the facilitation of end of life concepts…a reflective card game was very effective in raising self-awareness amongst the students on their own views of dying* (End of Life, 7/7/2015).

Educator comments:

N: 'The students have enjoyed the new format of the study days.'

C1: 'I have enjoyed teaching them more. Great experience, it put it into context for them.'

B: 'We have linked the study day a lot more closely to the assignment and the presentation. I think they found that useful.'

K: 'There is more cohesion…consistently well evaluated. It's working together, exploring the case studies, sharing experiences across the units.'

C1: 'We have lost that negativity about group work…we've made the information more patient relevant' (PBE FG1, 24/9/15).

2. *Referencing / evidence-based practice increased from 33% to 100%.* By the end of July 2015, robust referencing of teaching materials became normal practice; EBT being applied routinely to critical discussion, with application to nursing practice. The educators embraced EBT, representing a complete transformation.

Observer feedback:

'The study day is more patient / nursing focused…is underpinned by a robust evidence base / well-referenced' (CVS 3, 14/4/2015).

'Infection control lecture well referenced. Very good discussion of local and national practices / evidence-base, with students sharing their practices [local] with their peers (IC, 12/5/2015).

'The presentations are now referenced to provide a robust evidence-base' (Renal, 14/4/2015).

'An enjoyable critical evidence-based review of nutritional needs and care of patients in ICU (Nutrition, 12/5/2015).

'Sedation holds – good critical discussion applied to practice. Well referenced' (Sedation, 8/6/2015).

Educator comments:

'The use of a singular complex case study has definitely improved the study day by providing a framework upon which to link theory to practice' (CVS 1, 28/10/2014).

L: 'We are breeding nurses now that think; okay we're bringing in this screening tool where is the evidence to support its use? My generation didn't do that.'

H: 'We are better at linking EBT. I am not just relying on my tacit knowledge. I am much more likely to double check evidence, leading by example' (FG2, 24/9/15).

K: 'There is now a confidence that what they have learnt, they are going to use to impact on patient care. Higher-level thinking, and engagement in decision making. It is not just more knowledge, it is more of a feeling that I am going to apply this in practice' (FG1, 24/9/15).

Student comments:

'Group work helps…being given a topic to go away [case scenario] *and think about, then feedback to the group helps you look at research, critically analyse it and then get instant feedback from the tutors'* (F14, FG, B20, 2/215).

3. *Pathophysiology increased from 76% to 96%.* Normal physiology, which was a dominant feature, was transferred to pre-course learning. Classroom time focused on altered physiology linked to critical illness; applying this knowledge to develop deeper understanding and inform clinical decision making. This aligned teaching to core learning needs of critical care nurses and to addressing a key requirement of the assignment.

Observer feedback:
'Pain strategies group work…used very effectively to critically explore pathophysiology and care. Good exploration of different types of pain scoring tools in relation to patient treatment. Discussions were deliberately holistic which was very powerful in allowing students to focus and discuss the nursing aspects of caring for patients, relatives and the role of the multidisciplinary team' (Pain, 3/2/2015).

'Students fed back on the impact of ventilation on the physiology / pathophysiology. Included some discussion of impact on ongoing care and wider aspects of care including psychological aspects of care' (Respiratory 3, 17/3/2015).

4. *Role of the nurse (53% to 83%), relatives (14% to 83%) or the multidisciplinary team (38% to 90%).* The case studies re-focused thinking towards caring for patients and their relatives, the people who are the nurses' primary consideration; and aligning with the curriculum towards core professional issues involved in providing humane care. Discussions provided the opportunity to share experiences, leading to a wider consideration and understanding of the individual needs of patients and relatives.

Observer feedback:
'Case study at the start of day built a holistic assessment…good use of clinical reasoning and decision making… Students were split into three groups to consider topics such a basic nursing care, support of relatives, involvement of multidisciplinary team (CVS 3, 14/4/2015).

'New case study unravelled according to student feedback. Students worked together well as one large group, with all students contributing to critically evaluating changing patient status / group decision making applied to the general management and individualised holistic nursing plan of care, which included the relatives' (Renal, 14/4/2015).

PBE comments:

'Very happy with the changes, including the use of case studies which were very effective in engaging students in critical thinking and linking theory to practice. Students all evaluated the day 5/5 [excellent]' (Renal, 2/12/2014).

K: 'There was a sense of movement away from the medical side to make it more closely aligned to critical care nursing. That has come to the fore and become more important. I think that's a trap a lot of critical care nurses fall into, you forget about the creativity and artistry of being a critical care nurse. And we are now allowing some of that back into the programme.'

B: 'You are linking more theory to practice. We are following the patient all the way through, linking what we are talking about back to that patient. It gives students a more holistic view of everything…we were systems based, now we are holistic (FG1, 24/9/15)

Student comments:

C2: 'The scenarios help you put what you have learnt into practice (F14 FG 2/2/15);

D3: 'I found the case studies best, you have to apply it to a patient, that's how I learn' (FG 1, S14).

5*. Evaluation of care (67% to 97%)* improved by consideration of the evolving needs of patients and their relatives, which led to recognition of the need for a rehabilitation study day when the new CCP was being planned.

Observer feedback:
'Rehabilitation – good critical discussion of ICU rehab and current strategies, based around a case study, which worked very well in providing a focus on holistic care. Strong sense of nursing and provision of holistic care was present throughout' (Sedation, 8/6/2015).

6. ***Links to the academic assignments improved statistically from 14% to 53%,*** but the study days and consideration of the assignment remained largely disparate considerations. This may reflect a lack of general ownership and understanding, given only five out of eleven educators were involved in supporting students with their academic work or grading assignments, and were therefore not directly engaged with this element of the programme. The feedback (below) led to the adoption of a more inclusive approach to the provision of academic support, and assessment was highlighted for action in the development the new programme.

Observer feedback:
'Case studies were facilitated in small, mixed ability groups…The problem-solving skills of all members were encouraged. The dynamics of each group allowed for individuals to explain concepts and share expertise with confidence. Feedback was presented formally, which was a good rehearsal for their presentation' (Neuro, 8/6/2015).
*N: 'Those of us who are not on the marking group, don't necessarily have an overview. We have our single study day, so it's been nice to see the bigger picture' (*PBE FG1, 24/9/15).

Results: focus groups and questionnaires: January–September 2015.

Population: Students (89), Educators (n=11) (100% of population).

Pre-course: F15 (n=37/37), (30 questionnaires, 7 in FG);
Post course included two cohorts:
F14 (n=31), (n=22 questionnaires, 9 in FG)
S14 (n=21), (n=10 questionnaires, 11 in FG)

Q.1. What motivates the students to attend the CCP?

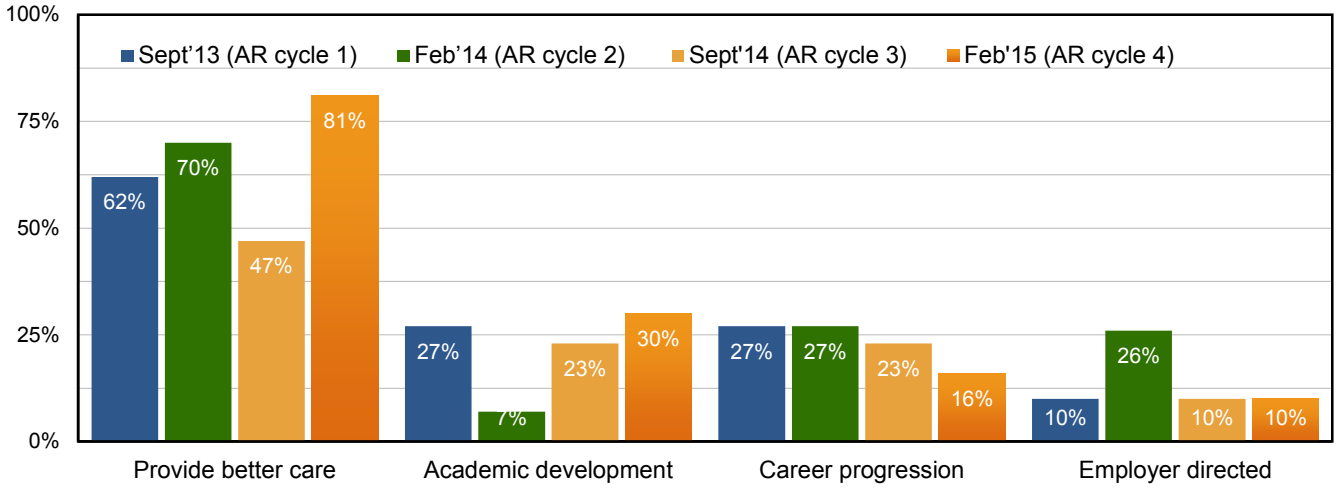

Figure 48. Thematic comparison between action research cycles 1–4

How motivated were the students?

The themes remained consistent, but it was the first time the level of student motivation had been quantified using a Likert scale ('0' = no motivation, '5' = highly motivated). F15 pre-course students expressed a mean self-rating of 4.54 for degree students (range 2-5) and 4.75 for master's students (range 4-5). The following excerpt from a focus group with F15 students commencing the CCP provides a window into their motivations.

B13: 'More in-depth knowledge so that I know I am doing the best for my patient…I want to be able to think on my feet more…just to have that autonomy really – you know when you are making decisions and interpreting things, and being able to discuss things more appropriately with doctors, and having them take you a little bit more seriously.'
B19: 'I am newly qualified…You learn on the job …it's gaining that greater knowledge of what you are actually doing…able to look at the bigger picture.'
B15: 'It's just putting more knowledge into your skills, relating what you learn into what you do... If it is too academic you can't actually relate it to actually doing it…when it's 50-50, you think "I get that" and I can actually use it.
B17: 'It's closing the theory-practice gap.'

B14: 'For me one of them was to do the degree… I did the ENB 100 in 1999 and I must say that it was at the stage when nursing was going through a process of having to prove itself to be academic…there was very little practical... I didn't feel that I got very much out of it. The way this course is structured appears more appropriate' (F15, FG, 28/1/15, n=7).

Learning / outcomes

The consistent primary motivation during this study has been to become better critical care nurses and provide better nursing care, representing a positive view of nursing as a caring, committed and professional workforce. A pattern emerged with 10% of students being 'employer' directed who were slightly less motivated than the rest of their peers, with ratings ranging 2–4 (plus one student who 'preferred not to comment') compared to 3–5 in the rest of the cohort.

Student comments indicated their expectation of the CCP matched the course vision and the standing of the course as the benchmark critical care qualification, helping them to link theory to practice and supporting the development of their autonomous clinical practice. There were consistent levels of motivation for developing academic skills and career advancement. Master's students' higher motivation scores highlighted their added intrinsic motivation, an important consideration during the admissions process that supports the brightest students being given the opportunity to academically challenge themselves.

Actions

- Share results with the Programme Committee, Curriculum Working Group and lead nurses to promote students voice, particularly the high level of intrinsic motivation amongst master's level students.

Q.2. How long should nurses work within critical care before commencing the CCP?

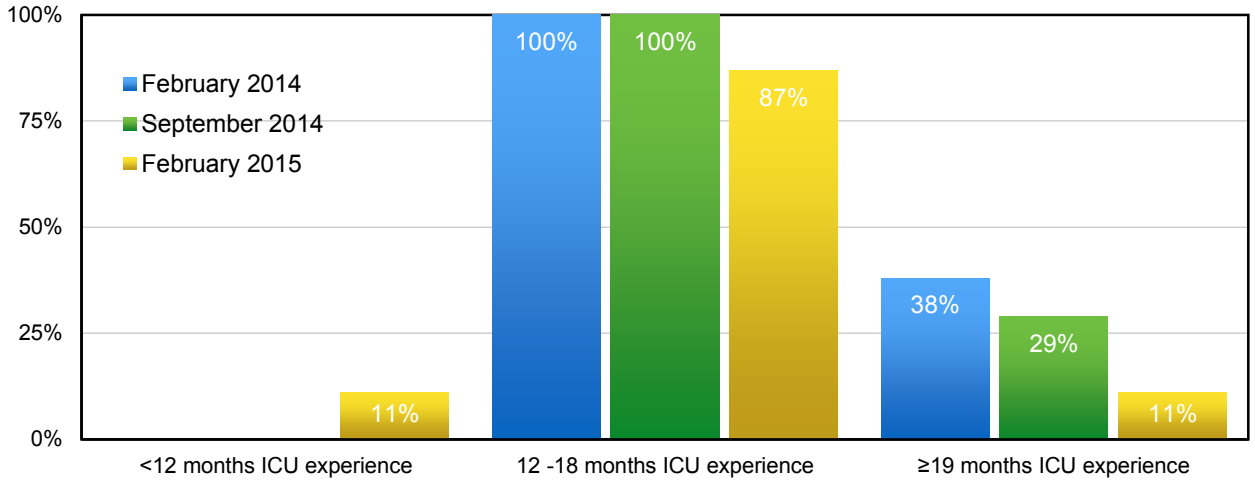

Figure 49. What is the optimum level ICU experience before commencing the CCP?

Learning / outcomes

F15 comments:

'*You need to get to grips with basics and feel confident'* [before commencing the CCP] (p.4, similar: p.8, 10, 21, 23, 27, 28).

'You need a good clinical background to link theory to practice' (F15, p.1).

Students consistently supported a minimum of 12 months' critical care experience as a pre-requisite, with a significant number stating greater than 19 months. In F15, 57% of students cited a period greater than two years for master's entry. While the standard of clinical competence was the same, many students shared the view of many educators that students wishing to study at master's level require more 'extensive knowledge and skills'. Master's students disagreed, feeling as graduates, they were ready to progress.

Actions

The Programme Committee and lead nurses to consider period of critical care experience required to access master's study.

Q.3. How much critical care experience did nurses have before starting the CCP?

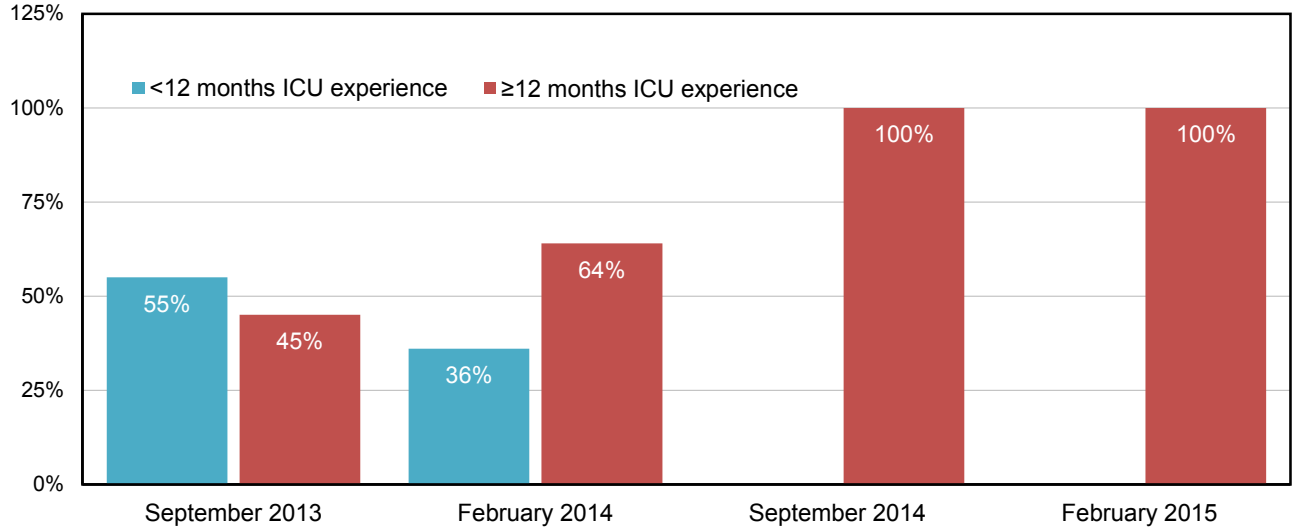

Figure 50. Period of pre-course critical care experience
Learning / outcomes

By September 2014 all students had a minimum of 12 months' critical care experience, and had completed the step 1 competencies when accessing the CCP. In the F15 cohort, the mean experience was 2.7 years (range 1–13). Students possessed a standard baseline of critical care experience to enable them to reflect and contribute confidently as active learners.

Actions

- None. Standard achieved.

Q.4. Was the course admission process fair and reasonable?

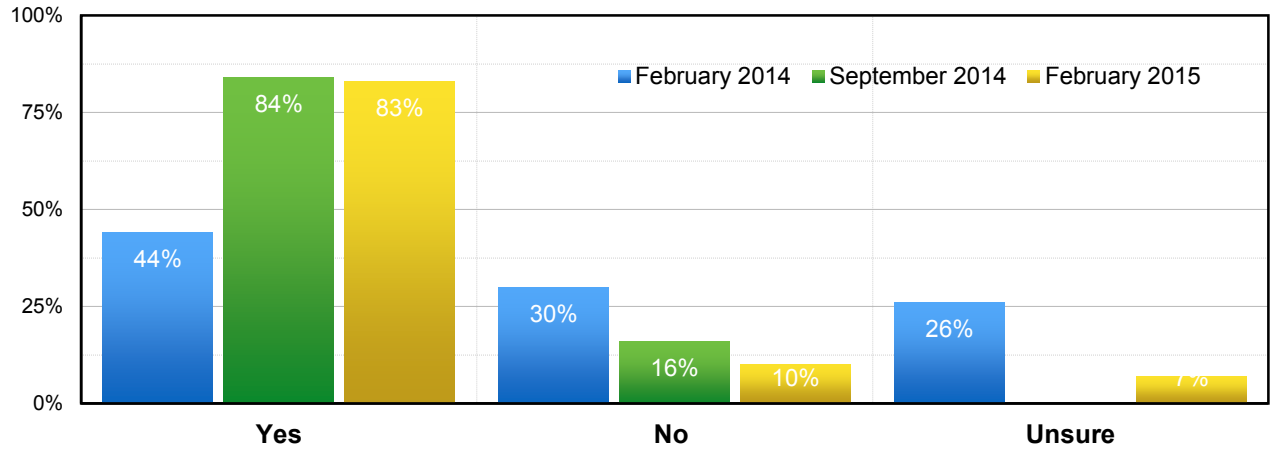

Figure 51. Was the course admission process fair and reasonable?

F15 comments contrasted with these statistics. While fewer students were dissatisfied, some were critical of the writing assessment as a measure of academic ability: *'highly pressured and unrealistic'* (p.14), *'don't give an accurate picture of ability'* (p.12).

Learning / outcomes

Student dissatisfaction with the admission process reduced from 30% in February 2014 to 10% within a year. The improvements resulted from student feedback, with greater clarity and transparency in the admission criteria diminishing the role of the writing assessment as the primary determinant of academic ability. The 2:1 entry requirement for master's meant students who satisfied the entry criteria were no longer required to undertake the writing assessment, though the majority of students given the option, opted to do so, valuing tutor feedback. The writing assessment emained controversial.

Actions

- Continue to monitor admission process and engage with all key stakeholders.
- Monitor academic performance as a measure of the success of the admission process.

Q.5. Were students accessing the CCP at their preferred academic level?

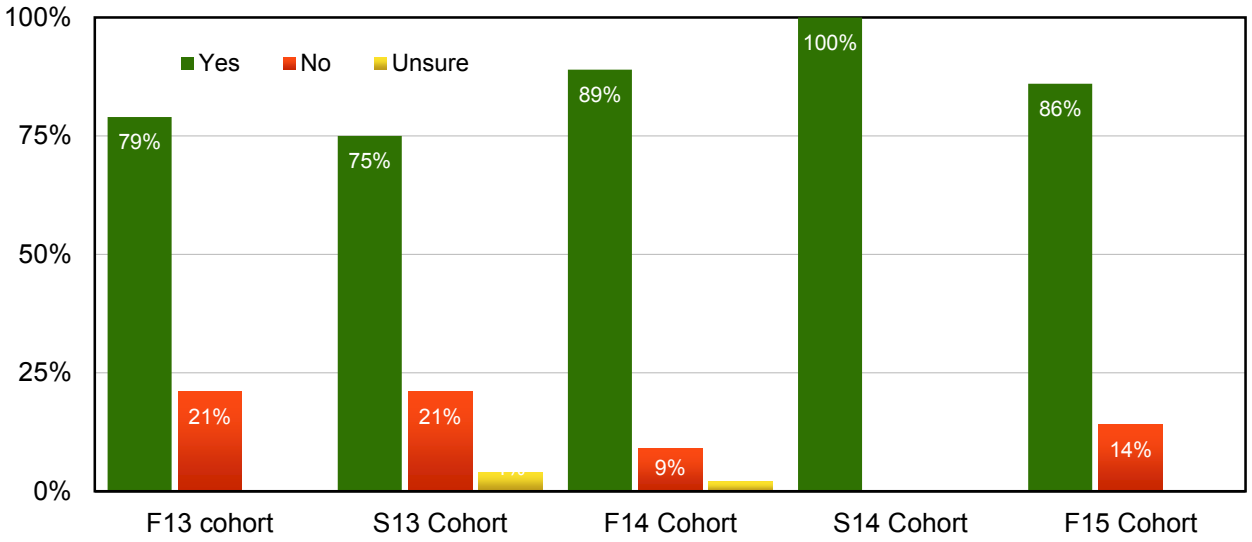

Figure 52. Did you access the CCP at your preferred academic level?

A barometer of the success the admissions process was whether students were accessing the CCP at their preferred academic level in line with their academic ability; an issue primarily impacting those aspiring to undertake master's study.

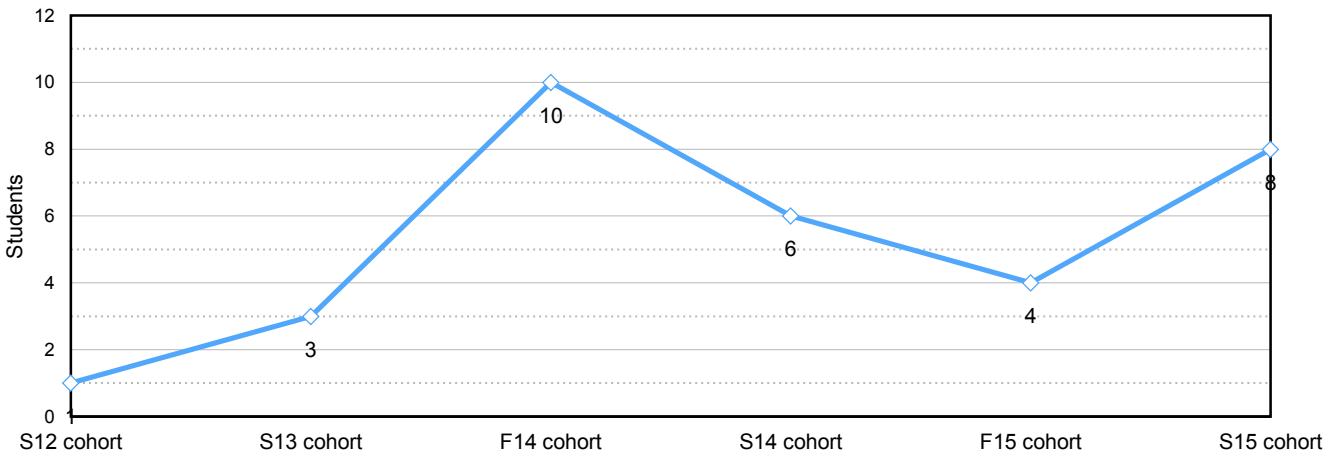

Figure 53. Number of master's level students per cohort over the course of the study

Learning / outcomes

Despite a reduction in the number of students who felt denied the opportunity to study at master's level, it remained a source of frustration for a significant number of students. The reduction in master's numbers in S14 and F15 coincided with students consistently reporting discouragement or obstruction from educators due to concerns over earlier higher than average referral rates. This barrier was partially alleviated by the 100% master's pass rate achieved by the February 2014 cohort and changes to the entry criteria.

The issue divided opinion between those who questioned the need for master's degrees and were concerned that relaxing access would increase referral rates, and those who were more driven by supporting students to achieve their potential. These conflicting opinions generated discussion of what a qualification at master's level in critical nursing means. Is it a purely academic 'master's award' or does it represent someone who has demonstrated they are a 'master of their craft'? By February 2015, the student demographic had changed with 60% of new students already graduates, meaning demand for master's study was likely to increase and this topic remains a pressing issue.

Actions

- Share master's success with lead nurses, PBEs and students to increase confidence in supporting these students.
- Explore with the PBEs their perspectives of master's level critical care nursing.

Q.6. What knowledge and skills did nurses expect to develop?

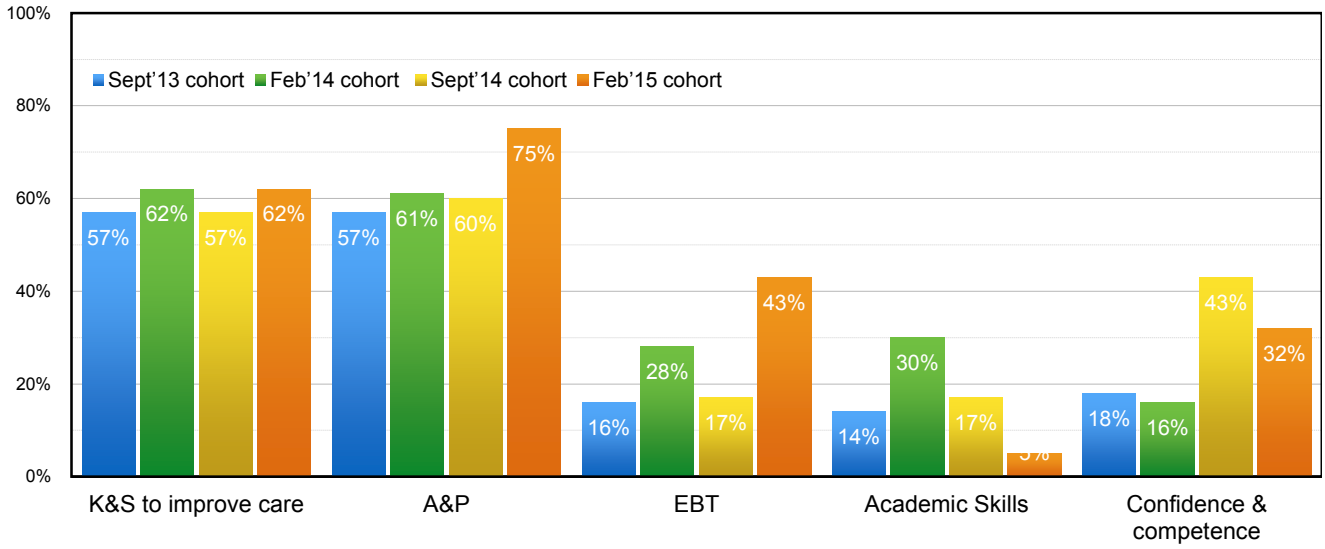

Figure 54. What knowledge and skills did nurses expect to develop?

How might this learning impact your future nursing practice? (F15 comments)

'Provide safer nursing care' / 'improve quality of care' using EBP (p.1, similar: p.2, 4,5, 6, 8, 12, 21, 22).

'Greater understanding of the patients' clinical condition' (p.21, similar: p.23,13,27)

'to make better clinical decisions' (p.3,14)*; 'feel more confident'* (p.19, 16,3,10) '*enable competent care delivery'* (p.18, similar comments: p.15, 22, 19, 12).

Learning / outcomes

Students strongly associated the CCP with developing their clinical knowledge and skills, enabling them to become better critical care nurses, rather than with developing academic skills. The course retained its core function, with two key themes emerging: the importance of understanding the altered physiology of critical illness and EBT is associated with improving the quality of clinical practice. Students consistently identified evidence-based

practice as a key expectation of critical care higher education, and its development within the CCP contributed significantly to realigning the curriculum with students' expectations.

Q.7. Did students achieve the knowledge & skills they expected to develop?

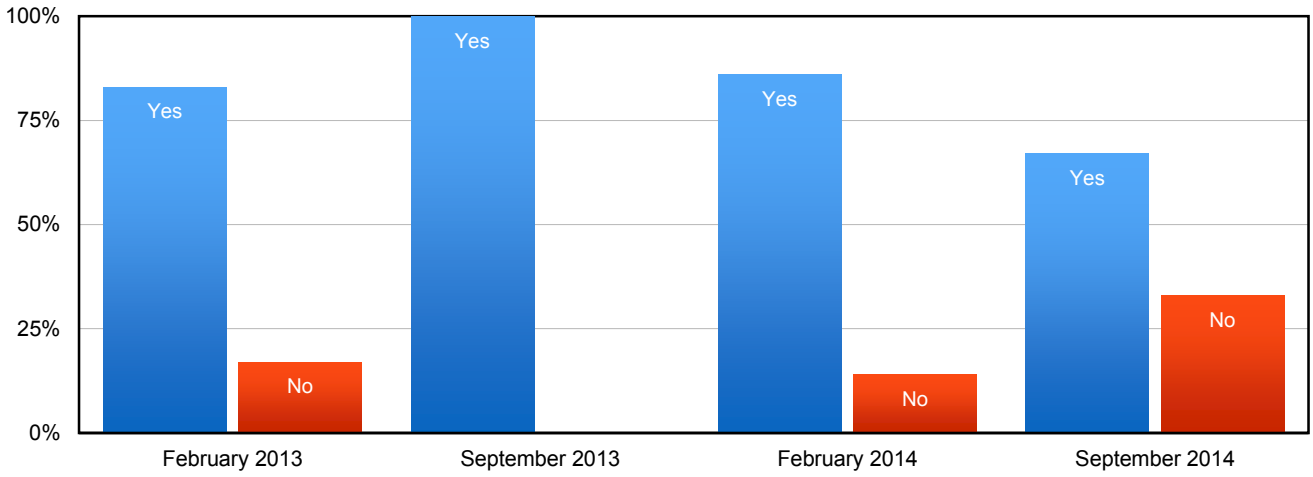

Figure 55. Did you achieve the knowledge and skills you expected to?

Students liked case studies

C2: 'The scenarios [case studies]*, I totally agree help you put what you have been learning into practice* [group agreement]' (FG, 2/2/15).

D4: *'I found the case studies the best really, especially when you feedback in groups. I have to apply the information to scenarios, because then I can think 'oh yes we had a patient like that last week - that's how I learn'* (S14, L6 FG 27/8/15).

D9: '*They are helpful in applying knowledge that is relevant to clinical practice…throws up items for discussion, rather than just learning by rote'* (S14, L7, FG 28/8/15).

Students were less satisfied with the content. 19% of F14 students found: '*The critical care module was far more beneficial* [than the acute care unit (ACU)]' (p.21, 4, 12).

D10: 'Even somebody who has a year in ICU…will still have this basic knowledge...You're just giving a refresher.'

D9: 'ACU was a waste of time…I would have benefited more if I'd been allowed to go to the library instead.

Moderator: 'The new course will focus solely upon critical care, examining areas such as morbidity risk, finance politics…'

D9: 'That's much, much better' (S14, L6, FG 27/8/15).

Learning / outcomes

Our students were now experienced critical care practitioners, wanting to build upon their existing knowledge and skills and the curriculum needed to evolve accordingly. These nurses wanted to study their specialism in greater depth, focusing on the disordered physiology, symptoms and management issues. In the context of our students, critical care education means studying the nursing care for level 2 and 3 patients (HDU / ICU). The use of complex case studies reflective of these patients (single and multi-organ failure) were useful in facilitating this learning by connecting classroom teaching with patient-centred nursing practice, helping students work as active learners linking theory directly to their clinical decision making.

Actions / outcomes

- A working group was established to develop a new CCP focusing entirely on critical care nursing, along with a separate unit to address the learning needs of acute care nurses.

Impact on academic practice

The next series of questions (8a–f) assessed the value to students of academic study, and the factors impacting academic gain. This included evaluating levels of student engagement, the quality of academic support and, more specifically, examining the relationship between student engagement with the formative assignment and its impact upon summative performance. The combined learning is presented at the end of this section.

Q.8a. What did the pre-course students perceive as the value of academic study?

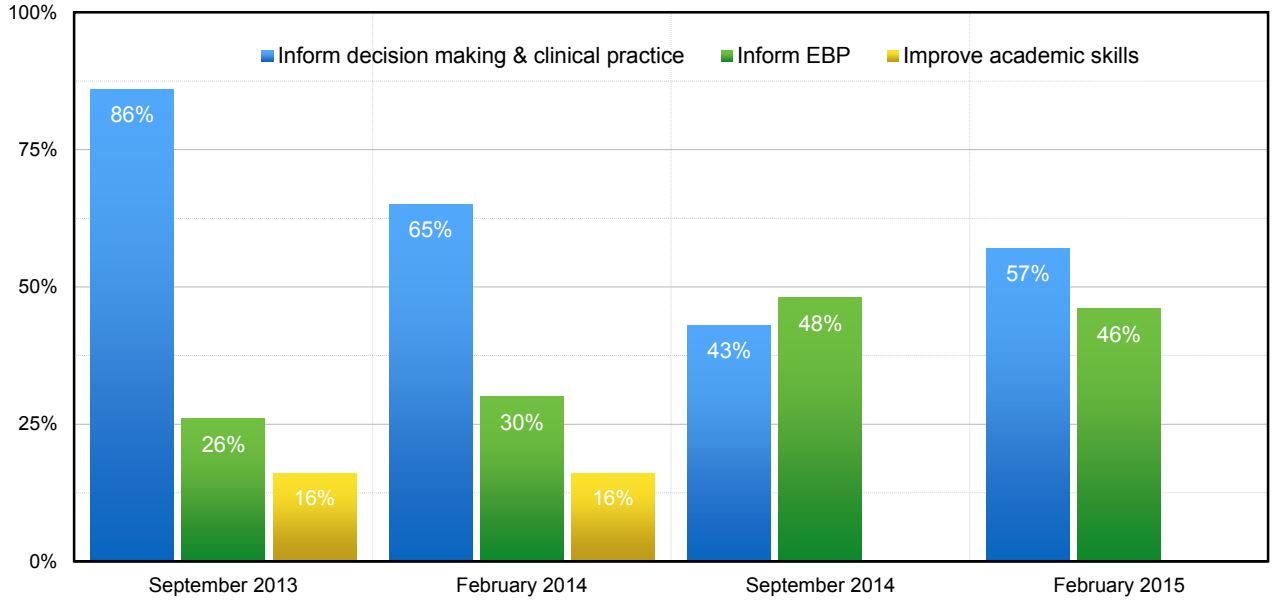

Figure 56. What do you see as the value of the academic study in this course?

F15

- **84% directly linked academic study with improving their clinical practice.**
- 57% used the phrase *'decision making'* and 46% *'EBP'* when describing the value of academic study. There were no negative comments.

Typical comments included: *'**EBP** is essential to providing best care'* (p.11, similar comments: p.1, 2, 8, 12, 13, 15, 16, 22); Linking '*theory to practice makes you more competent'* (p.24, similar comments: 6, 7, 17, 21, 27).

B18: 'It is going to make us more accepting to changing practice…if you have the academic side, you will understand why practice is changing and be able to look into…how we can do things better.'

B14: 'You're more likely to question practice.'

B18: 'Yes, that's it. It is the only way we are going to improve.'

B16: 'And you know how to do that. You know where to look and find something.'

B15: 'Nursing is changing… you are expected to be more knowledgeable and have the academic side of things as well' (FG, 28/1/2015).

Students consistently linked academic study with learning and understanding the EBT, which would inform their clinical decision making. The post-course comments below, combined with the responses to Q.9a, indicate the curriculum changes (content and pedagogy) were delivering results because they were supporting the application of critical analysis in questioning current practice and synthesis of the EBT as part of this decision-making process. This was notable during their contributions within the case studies, developing higher order (transferrable) thinking skills, which were relevant to and supported practice development.

B20: 'The group work helps… being given a topic to go away [case scenarios] *and research, think about and then feedback to the group helps you look at the research, critically analyse it, and then get instant feedback from the tutors'* (F14, FG).
D9: 'They are helpful because it is the application of knowledge that is relevant to clinical practice, and during working through a case study, it throws up items for discussion, rather than just learning by rote…the course made me question more.'
D11: 'Questioning what you are doing, examining EBP' (S14, FG2).

Q.8b. Did F14 students feel their academic skills improved? Yes 82% No 18%

F14 0 – 1 – 2 – **3.4** – 4 - 5 (unchanged for S14), **median 4** (range 0–5)
('0' indicating no improvement and 5 indicating a very high level of improvement.)

The 0–5 range indicated that a significant minority of students felt that after 12 months of study they achieved no academic learning gain, while others reported very high levels of improvement. The median '4' score, combined with the 80-82% 'yes' response indicated most believed their academic skills gained a high level of improvement, providing a useful, balanced indicator of the quality of our higher education. In the following excerpts, the first with S13 students when re-sitting their summative presentations (January 2015) explored

why they had initially been unsuccessful; the second provided insight into the learning experience of master's students. The purpose was to understand why some students failed to progress and learn how we could best support all students' academic development.

Level 6 S13 students:

B8: We need to practice the art of critically evaluating…you should say that we are going to spend an hour talking about your assignments.

B11: They do provide that. You can put your name down and go and see people.

Moderator: We have introduced a formative piece of work.

B9: You see we didn't do that. If I had then I would have known that I was rubbish at it.

Moderator: It's a formative assignment, which students complete halfway through each unit.

B8: That's exactly what you need to do.

B9: I know we are adult learners, but I have been quite lazy.

B12: If you want to work, you will work.

Moderator: how much of you're not passing was down to you not putting enough work in?

B11: 'About 95%…because I've already got my degree.'

B11: 'I agree – my attitude has been poor (S13 FG, January 2015).

L7 S13 students

D.9: 'We are taught alongside the level 6 students. In the teaching, we don't get any additional input to consider higher level thinking issues [group agreement].*'*

D8: 'If you could just have say one [level 7] *study day / month that would be helpful.'*

Q.8c. What was the level of student engagement with academic support?

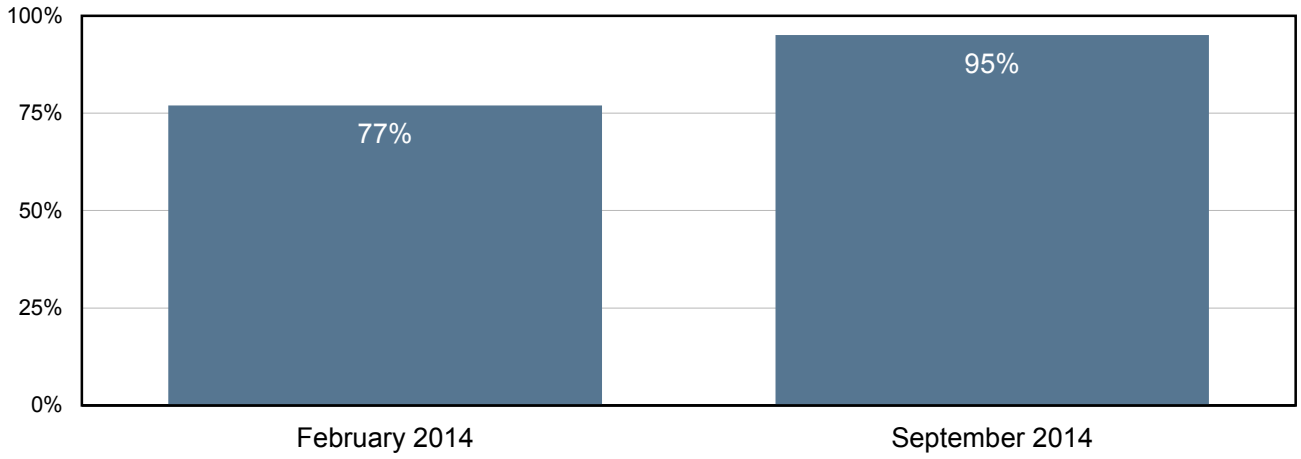

Figure 57. Percentage of students who engaged with academic support
Context: formative assignments were introduced in February 2014 on an optional basis.

The September 2014 cohort was the first to receive timetabled formative feedback on their academic work, producing a higher level of academic engagement.

Q.8d. Engagement with the formative assignment

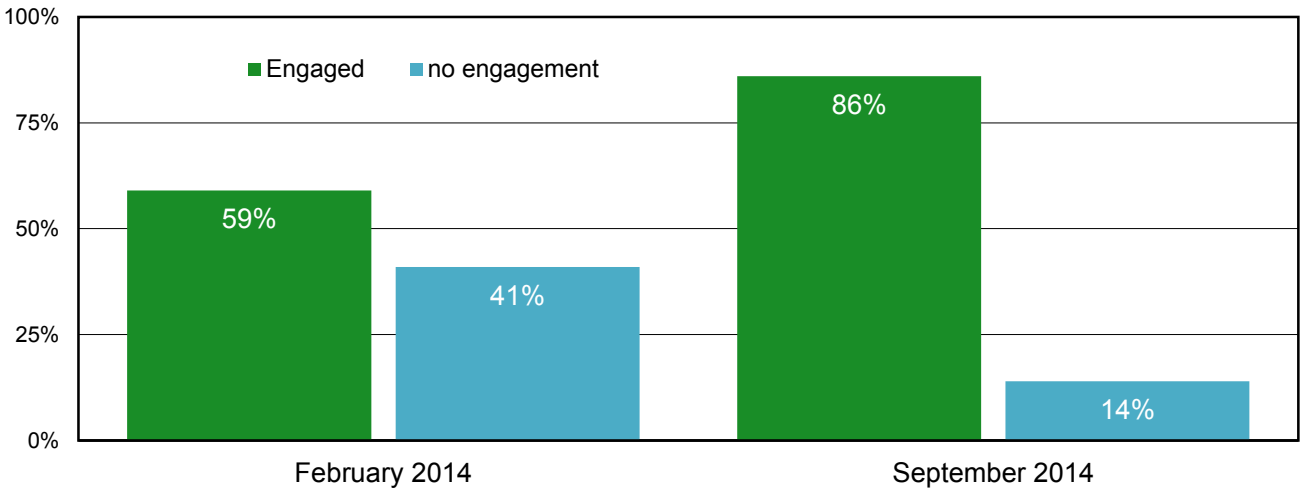

Figure 58. Percentage of students who engaged with the formative assignment

Q.8e. Did engagement with formative assignments improve academic performance?

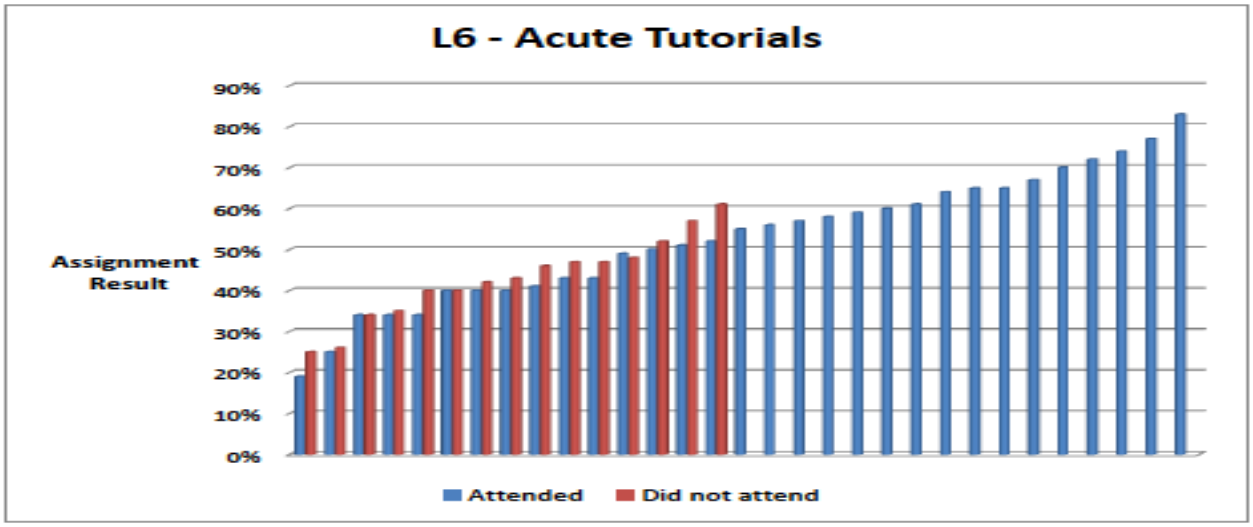

Figure 59. L.6 academic performance linked to the attendance of academic tutorials

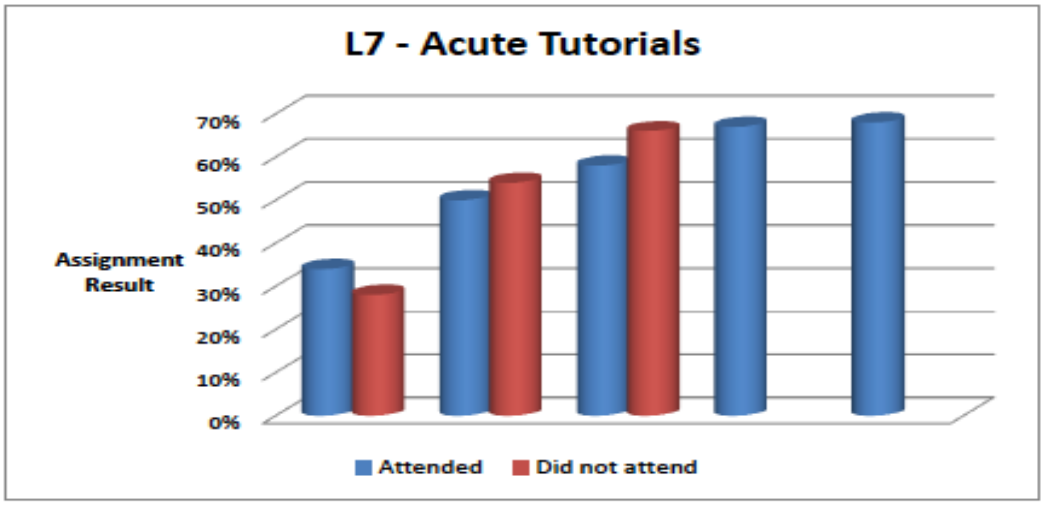

Figure 60. L.7 academic performance linked to the attendance of academic tutorials

Each pillar in the charts above represents a student from the S14 cohort, identifying those who attended their formative assignment tutorial and those who did not engage. The impact of engagement with the formative assignment was most striking with level 6 students, where

non-engagement was associated with an overall poorer academic performance during the subsequent summative assessment. Student feedback corroborated their value to students.

D4: 'I felt less nervous this time. If we hadn't had the formative experience I wouldn't have been able to stand up in front of people. I would have considered leaving the course, it was that bad. Just by making me stand up and do it [formative practice]*, gave me the confidence I needed.'*

D6: 'It was nice to get feedback from different sources [tutors / peers] *and see each other's presentations. People will see different things that you missed'* (S14, L6, FG 27/8/15).

Q.8.f. Was there a significant improvement in academic performance over the study?

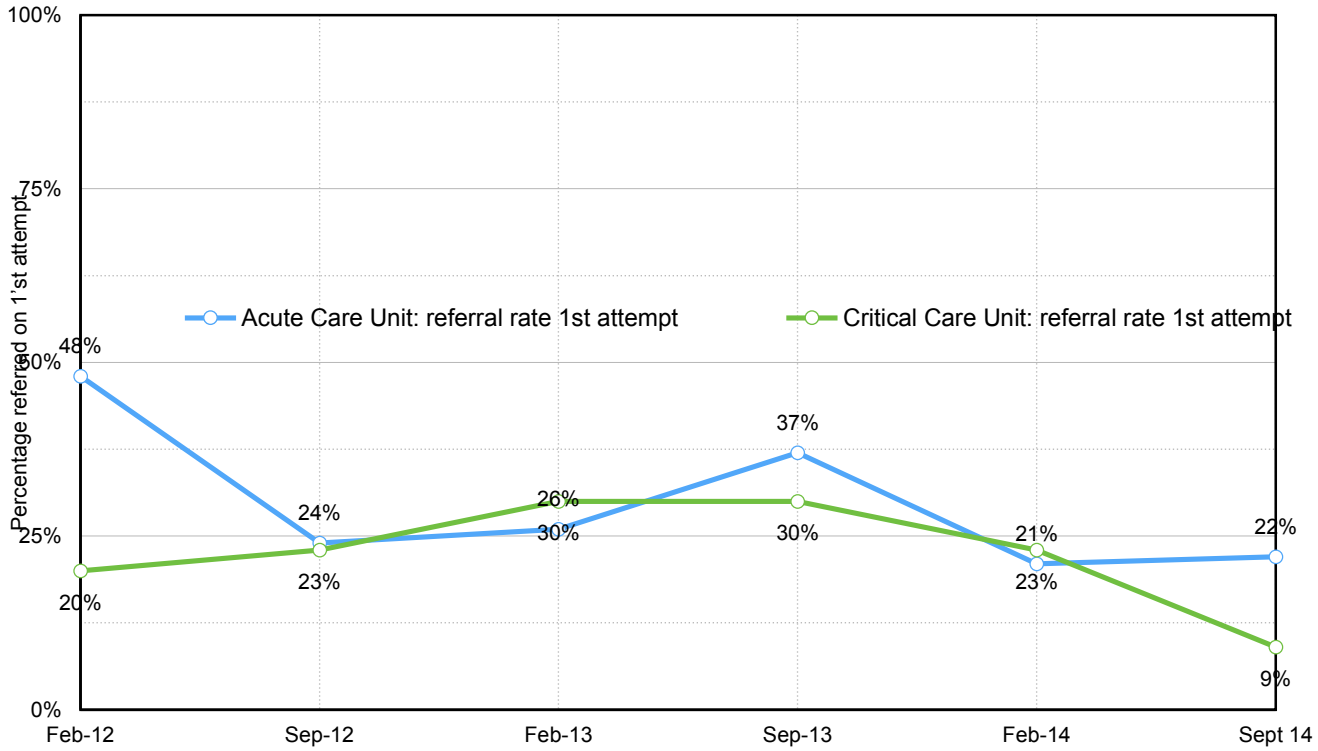

Figure 61. Summary of student academic performance: first attempt referral rates

Referral rates at first attempt for the written assignment in the ACU fell from 37% with the S13 students at the start of the study to 22% with S14. The impact was much greater when formative assignments were used to support students with their CCU oral presentations, where the benefit of practising and receiving feedback on their slides' format and presentation style resulted in a reduction in first referral rates from 30% with S13 students to 9% one year later with S14. This improvement has continued since the studies completion, with S15 referral rate 13%, before achieving 100% pass rates for S16 and February 2018 cohorts with the students' case study presentations. The written assignments continue to prove more challenging with referral rates in the 20-23% range.

Learning / outcomes (Q.8a–f)

Students strongly supported the embedding of formative assignments into the curriculum to provide structured academic development alongside critical care nursing theory. The median score of four for the quality of academic support (Q.8a) boosted educator confidence, but the results also highlighted that 10–18% of students did not consider their academic skills had improved. Reasons varied, with some students explaining that because they were already graduates, they lacked the necessary motivation to repeat study at this level. This was a theory expressed by some of the educators to explain the poor performance of some students. It has credence, as it is unsurprising that when repeating study at the same level, some students reported their skills remained unchanged, with the motivation to improve being reliant on their intrinsic desire to perform well and learn.

This focused attention on increasing the engagement with students, to nurture this intrinsic motivation so a greater percentage of students would learn from, and feel motivated to gain from the high quality of academic support. The increased tutor workload raised questions

from educators regarding the value of formative engagement, when many of the students who referred had been openly critical of their own attitude.

Coates (2005) offers reassurance, emphasising the importance of student engagement as a quality indicator in higher education. The transition to making engagement with formative assignments and tutorials an expectation was initially viewed by some as harsh, but it was well received by students and finds support from Brown et al. (2014), who argue that higher education needs to become more rigid, placing an expectation on students to demonstrate they are engaged in and taking ownership of their learning.

Interaction with students is recognised as key because it allows tutors the opportunity to foster their contribution as active learners, helping them to construct and apply their knowledge, writing style and other academic skills, which is what really influences deep learning (Ramsden, 1992; Biggs and Tang, 2011). The classroom observations and student feedback provided some evidence we were achieving this, moving away from didactic learning towards an active learning environment.

The high impact of formative assignments supported by timetabled tutorials overcame initial scepticism because they resulted in marked improvements in the level of student engagement. Level 6 students' academic performance was significantly better amongst those who engaged with and attended their formative assignment tutorials (Q.8e figure 59). The impact on student performance was significant in both summative assessments, significantly improving student progression.

Focus groups with students had exposed unforeseen failings in a curriculum written in 2011 primarily to meet level 6 requirements, which accounted for 98% of students. By September

2014, there had been a significant demographic change, with 18% now studying at master's level. These students expected greater opportunity to sharpen their academic and research skills at this level, not general group clinical discussions. The assessment strategy required a greater opportunity for innovation, such as poster presentations with oral questioning. The curriculum required major modification to provide distinct master's level learning outcomes and assessment strategies.

Impact on Clinical Practice

The purpose of the CCP was to develop competent critical care nurses who deliver safe and effective care based upon EBT. Questions 9a and 9b evaluated the impact of curriculum change upon clinical decision making, confidence and clinical competence.

Q.9a. Did the CCP influence students clinical decision-making?

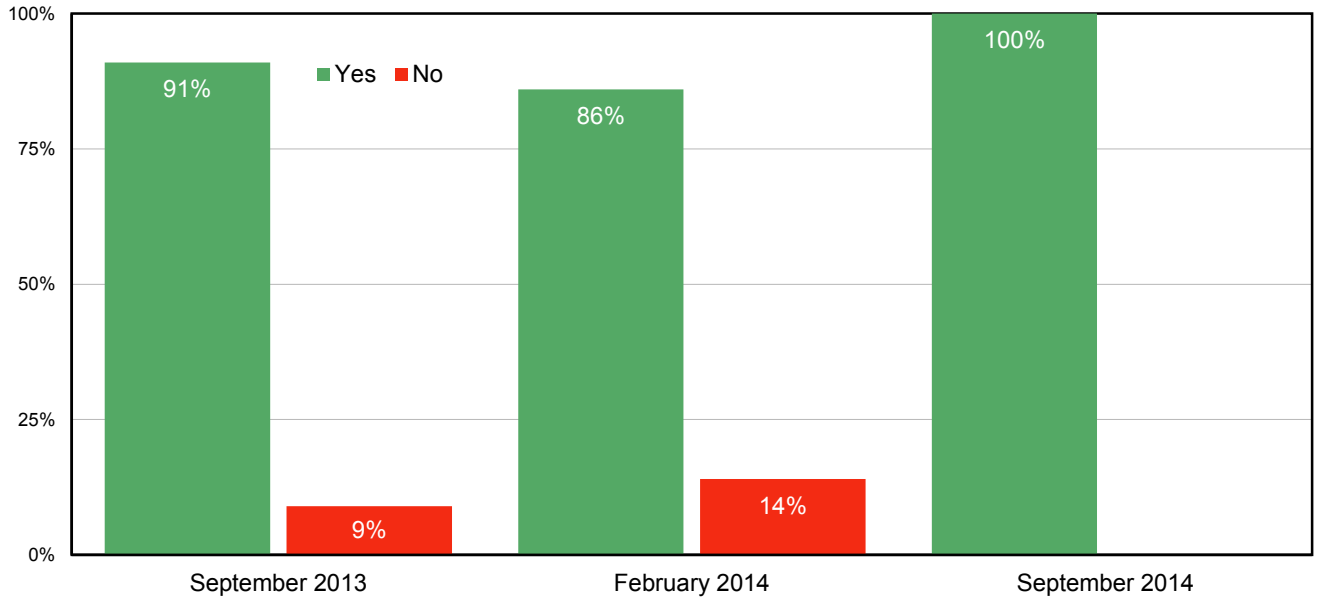

Figure 62. Has the CCP influenced your clinical decision making?

'Expanding my knowledge, knowing what I do is evidence based' (S14, p.1, 2, 3; F14 similar x 5).

'It influences a lot of what you do. It makes you realise why you do things and makes you question if you are doing things correctly, or is there a better way? (S13, FG, B6)

'Yes – it has made me question things more…so it delivers' (S14).

D6: 'Doing a presentation made me read up on a topic, evaluate the evidence and it has definitely changed my practice in this area' [group agree] (S14, FG, 27/8/15; similar S14 p.2, 9, 16, 18, 19).

Q.9b. Did student confidence improve? Did they feel better critical care nurses?

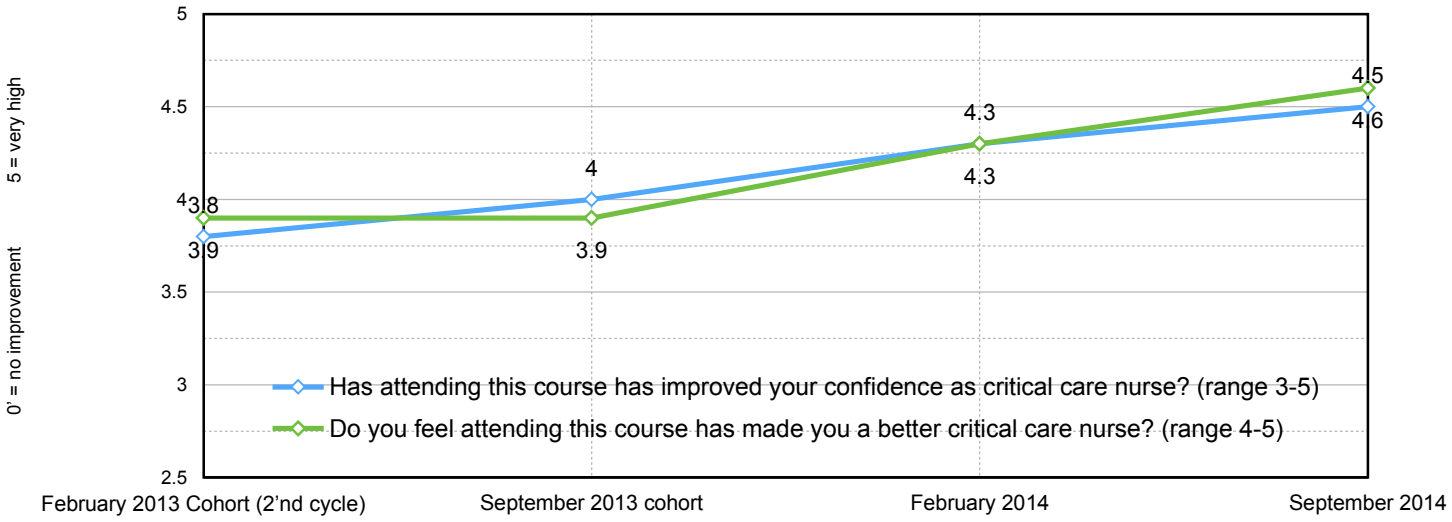

Figure 63. Impact on the clinical confidence and competence of students

D9: 'A year is a long time, so it's hard to say if the growth in confidence was attributable to the course or the critical care experience. But I have gained a lot more confidence'
D11: 'It is good to see what other units are doing. That builds confidence' [full agreement]
D7: 'I definitely feel more confident in my decision making' (S14, L6, FG 27/8/15).
'It has taught me to think about ICU patients as a whole' (S14, p.9).
'Great improvement to my confidence…really increased my knowledge that I can put into practice' (S14, p.4).

Q.9c. Was there confidence in the assessment of clinical competence?

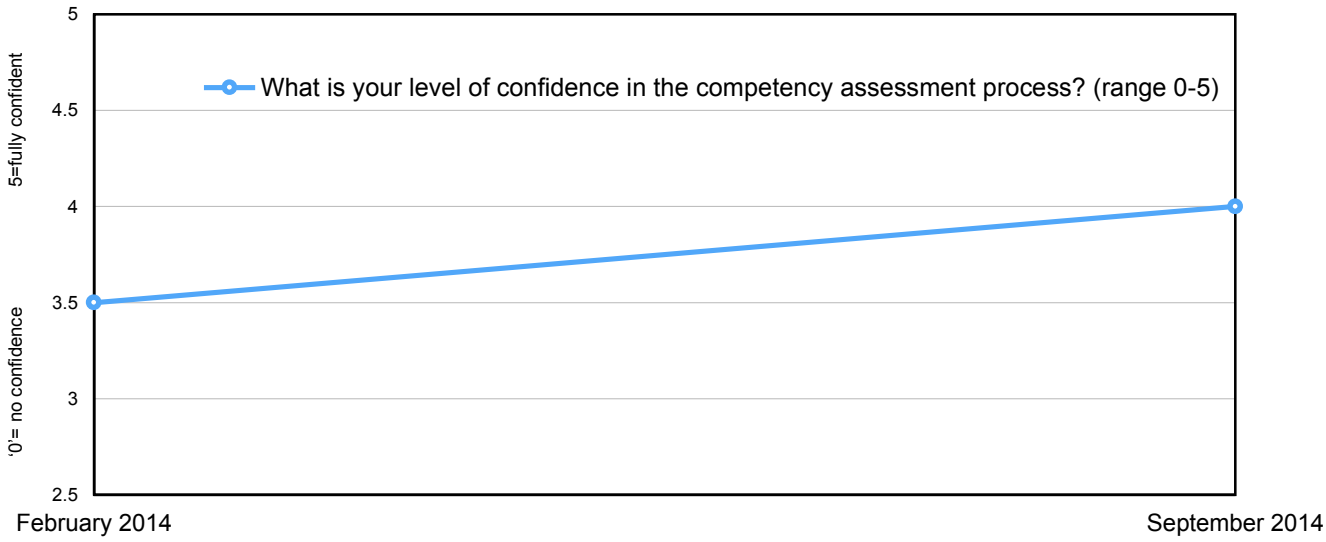

Figure 64. What is your level of confidence in the competency assessment process?

It was clear that for many students achieving time with their mentor remained a considerable barrier, complaining that the clinical area was *'always too busy. Need time set aside'* (F14: similar comments by participants 16, 13, 12, 7, 3, 8, 6, 18, 1, 4, 9). The 0–5 range indicated learner experience varied, depending largely upon the size of the critical care unit. Student confidence in the robustness of the assessment process improved marginally following feedback on this issue to the lead nurses and PBEs.

Learning / outcomes (9a-c)

There was evidence that the process of listening to our students, integrating a robust EBT into the CCP, coupled with the use of case studies to link theory directly to decision making when caring for patients, had combined to improve the quality of the curriculum. September 2014 were the first cohort to unanimously report the course had positively impacted their clinical decision making citing improved knowledge, understanding of patient conditions, EBT and the adoption of a more critical approach.

The development of competence and confidence reflects their experience within practice, particularly the robustness and fairness of the assessment of their clinical competency. The high number of student responses to question 9c highlighted the importance of this issue to students; a key area impacting not only their overall learning experience, but an important factor in the development of their self-confidence, by knowing they have been assessed with rigour and fairness.

The improvement in the confidence of students in their clinical ability as critical care nurses was measured as they completed the course. There was consistent progression from when this question was first asked in the second research cycle, providing significant confidence that the curriculum changes had improved the overall quality of CCP, and was developing nurses in line with the course vision. The range of 4–5 for being a better critical nurse had improved from 2–5 in the third cycle, providing further confidence in the validity and reliability of the data underpinning these indicators of improvement.

Conclusion

The findings have demonstrated the value for educational providers in engaging with and listening to service users, the students and the employers, to ensure there is a shared educational vision and strategy. Participatory action research empowered participants, providing a method of working collectively, reflecting on our practice and learning with and from each other. Action research led the generation of new insights regarding how we could revise the content and delivery of the curriculum, re-focusing teaching towards one that facilitates learning, helping students to develop into confident knowledgeable practitioners. The educational pedagogy had evolved to provide greater opportunities for students to work with their peers to construct their own learning, applying theoretical knowledge as they

worked together to devise real world solutions and plan holistic nursing care. This represented a move away from a technical and didactic medical knowledge model of education towards one that provides sufficient room for professional growth, including consideration of the humane caring aspects of nursing that the MCCC team felt were such an important feature of critical care nursing.

Chapter 6. Examining the Impact of the Research

Chapter preview

This chapter outlines the impact of this research on the way that local critical care nurse education is delivered. It will explore how the learning obtained from this action research has contributed to the education of our students and faculty and informed the wider development of educational practice.

Contributing to the Education of our Students

The education of our students was the focus of this action research and their voice was central to helping us understand their expectations, values and motivations, which contributed to the redesign of the curriculum. The students' high level of motivation was largely driven by a desire to deliver improved patient care; a positivity that largely dispelled the negative view held by some of the MCCC team that poor student performance was due to a lack of effort and engagement. The reality was very different. Only 10% stated they had attended because they were sent by their employer, and almost all this group expressed that given the option, they would still have chosen to attend.

The student engagement resulting from this research was enlightening and refreshing for the faculty. The students came to be viewed more positively, motivating the MCCC team to engage further with them. They became more receptive to the students' views, which led to the development of a 'culture of mutual respect' (U1, FG, 9/9/2015). As the study progressed, the student voice resulted in tangible curriculum change. The students became more engaged in and willing to contribute to the study, and for the first time representatives

attended the Programme Committee. Student feedback directly influenced the following changes: course entry criteria; the format and role of the writing assessment; the integration of the evidence-based practice; the way case studies and formative assessments were utilised; and the formulation of a new critical care programme.

At the start of the study, we were unclear as to whether there should be a non-academic option or diploma option, providing flexibility for students in acknowledging that not all nurses are academically inclined, and recognising the value of vocational competency-based education. This option was rejected by the lead nurses and the students, who were in agreement that they highly value the contribution of graduate and master's level study towards improving their clinical practice, the development of their transferrable skills and furthering career aspirations. In the F13 cohort, 74% reported that undertaking academic study that explored their clinical practice had made them better critical care nurses. One of the most striking findings was the dearth of negative feedback relating to the presence of academic study, with only one student out of 250 expressing a truly negative comment, describing it as a 'black cloud'. There was almost 100% support for a curriculum that uses higher education in conjunction with competency-based assessment within clinical practice.

Learning that 40–47% of students were initially unaware of the National Standards for Critical Care Nurses Education (CC3N, 2011) was surprising, given the programme had been designed to meet this standard. Learning that 80% of students strongly supported them, with 43% citing the value of academic credits, 14.5% welcoming its national transferability and 16% associating it with improved patient care, taught us a lot about the goals and aspirations of our students. Increasing student awareness of these national

standards[10], allowed them to appreciate the learning and career opportunity open to them in gaining a nationally recognised benchmark critical care nurse qualification.

The student demographic changed during the study; 30% of applicants were graduates in 2013, a figure which increased to 60% by September 2016. As the study progressed, the changes to the curriculum were influenced by feedback from graduate nurses who expected a higher level of academic education than was provided. The students were ahead of the educators and curriculum, and their expectations and feedback provided much of the learning and the force to drive forward the vital action component of this research.

A key finding was the students' clear expectation that teaching and learning was underpinned with a robust, current evidence base. This moved classroom teaching away from a situation where tutors were over-reliant on sharing their tacit expertise, to one more congruent to the evidence-based values of higher education and critical care practice, which more closely mirrored our expectations of our students' academic work. As Thompson et al. (2005) suggest, this desire to understand the evidence underpinning healthcare may represent a wider shift in societal and student behaviour; the result of increased ability to access a wide range of information via the internet, resulting in greater openness and empowerment. As one educator explained: '*I think we have learned that the students come from a different culture than we were used to and they have different expectations of an educational programme'* (V, FG, 9/9/2015).

[10] 80% of students were aware that the CCP was based on these national standards by September 2014

The student voice provided positive energy to support the feedback that was provided during the classroom observations; informing, empowering some educators and coercing others to examine and change their teaching practice. The need to gain greater understanding of the altered physiology of critical illness was consistently identified by students as a foundation for allowing them to rationalise and have greater confidence during clinical decision making. The classroom focus on normal anatomy and physiology was changed following this feedback and this information was moved to pre-course materials, allowing experienced critical care nurses to use the short time in the classroom to learn applied pathophysiology.

The integration of EBT into the fabric of the CCP to inform an evidence-based approach to nursing, married with Carper's (1978) model, allowed us to consider the basis for our collective 'knowing', and with the help of Macnee and McCabe's (2008) model, weave it into the programme. This 'knowing' was essential for several reasons. It provided confidence in the quality of the teaching materials used to teach students professional and academic practice. Critical care is a medically dominated speciality, where empirical science forms the basis of evidence, which may partly explain why evidence-based practice was so important to these students. The confidence in their knowledge base provided a platform for the development of their professional self-assurance, being *'able to discuss things more appropriately with doctors, and having them take you a little bit more seriously'* (F15, FG, 28/1/15).

Patient-centred case histories moved learning away from a narrow focus on the medical technical aspects of critical care towards the exploration of core nursing issues. The case studies were developed into several threads within some of the study days, sequentially unwinding as students requested, and were provided with further information. Students

worked together sharing knowledge and skills in problem solving, decision making, evaluating data and applying theory directly to the holistic nursing care of critically ill patients and their families. These plans of care were then shared with their peers to develop their presentation skills.

The use of these case histories transformed much of the classroom teaching, focusing care around the individual needs of the patient, and placed students in an active role constructing their own learning, sharing their knowledge and experiences with their peers in the manner described by Barak et al. (2007) and Horsfall et al. (2011). It was the students who identified the key issues, honing their thinking skills (Eshach and Bitterman, 2003; Kunselman and Johnson, 2004; Malesela, 2009; Karami et al., 2012), 'braiding' different sources of knowledge into 'actionable intelligence' (Johnson-Freese, 2012) to make clinical decisions, which is highly appropriate to a practice-based profession such as nursing.

The facilitation of these discursive teaching strategies provided students with the opportunity to pause and reflect, and draw upon their knowledge. Combining their individual knowledge and experience with that of their peers, helped them to unlock the 'unconscious knowledge' that Mantzoukas (2007) explains frequently underpins our decision making in clinical practice. These peer interactions with colleagues from different critical care units and with varied levels of experience, were frequently cited by students as one of the most valuable sources of learning on the study days. The introduction of this teaching technique correlated with consistent improvements in student confidence and feelings of competence in practice, with feedback such as it has '*given me more confidence and understanding of why we do something'* (S14, p.6) and a *'Great improvement to my confidence as a critical care nurse…really increased my level of knowledge that I can put into practice'* (S14, p.4).

Distler (2007) had reported similar findings, concluding that the case scenarios were highly useful in supporting nurses with the transition from junior to qualified critical care nurse. The claim of Tiwari et al. (2006) linking the use of case studies to improved performance of these decision-making skills in practice, cannot be verified by this study. However, their introduction alongside the underpinning of the programme with EBT resulted in an increase from 91 to 100% of students reporting that the course had influenced their clinical decision making. Whilst there was no direct evidence of improvement in knowledge and clinical skills as described by Worrell and Profetto-McGrath (2006) and Choi et al. (2013), an indirect correlation was that student clinical confidence in their ability as critical care nurses consistently improved in line with the changes made to the CCP during this study.

Case studies applied classroom learning directly to the context of clinical nursing practice. As one student noted, *'I found the case studies best, you have to apply it to a patient, that's how I learn'* (FG 1, S14). This finding supports the theory that practice development and behaviour at the bedside is inextricably linked to the way nurses learn, and that education should be relevant to and support the delivery of the art and science of critical care nursing (NES, 2006; Tanner, 2009; Benner et al., 2011). Another student commented '*They are helpful because it is the application of knowledge that is relevant to clinical practice'* (S14). The learning resulting from this study focused the curriculum and its delivery towards the provision of individualised *nursing care* for critically ill patients and their *families*. This was not one of the original objectives; rather, it was an unexpected insight and an important consequence of the study.

The classroom culture had transitioned from a passive teaching pedagogy of tutor dominated lectures in the CCP in 2013, to a constructivist approach with teaching designed

to engage students in critical discussion. In line with the consensus in the literature (Chabeli and Mangena, 2005; Hwang and Kim, 2006; Barak et al., 2007; Jones, 2012; Biggs and Tang, 2011), the CCP had re-positioned students as active partners in constructing their learning. They provided planned opportunities to practise their higher order thinking skills in the classroom and during the formative assignments, just as they do within the context of everyday clinical practice. This transition resulted in increased student satisfaction, which concurs with the findings of Jones (2012), Williams (2000) and Biggs and Tang (2011). The benefits of this transition in teaching strategy reach beyond student or tutor satisfaction.

At the start of the study we theorised that the poor performance of some students was linked to experiencing didactic teaching based upon unreferenced materials, which was mirrored by students' descriptive and often poorly referenced academic work. The utilisation of active learning and the underpinning of the teaching materials with a robust visible (referenced) evidence base were in line with the students' expectations of a contemporary critical care higher education programme. This provided some confidence that through this action research we were learning how to better support our students in developing their higher order thinking skills and their 'knowing' within the context where it would be applied (critical care nursing). The theories supporting constructivist teaching methods as an effective strategy for improving students' critical thinking skills (Biggs and Tang, 2011; Jones, 2012; Baumfield et al. 2013), combined with improved EBT, had formed the basis for a rose-tinted optimism that given time, academic performance would improve. In practice, the transition towards this pedagogy was slow, with many changes not becoming established classroom practice until the last cycle of the research, making it difficult to directly correlate this pedagogical transition with eventual improvements in academic performance.

The connection appeared logical, but the reality was more complex and the connection vague, with 82% of the F14 students reporting their academic skills had improved, but 18% reporting no academic gain after 12 months of the study. The 0–5 range, with a median score of four demonstrated most students did feel they had achieved a good to very good level of academic development. The views expressed by some educators that some students were not motivated to repeat degree level study was tentatively supported by the feedback from an interview with referred students; they felt that they had developed very little academically, but most of the blame for this lay with their attitude, which they described as ‘poor’.

The improvements in academic performance were the result of listening to consistent student feedback that academic development (and the assignments) was distinct from the study days. The academic component was seen as separate, the responsibility of the marking team who mentored the students. The provision of academic support contrasted sharply with the students’ learning need in this area, with 58–71% identifying it as a primary concern, which is unsurprising given many had not studied within higher education for many years.

This information informed the introduction of timetabled formative assignments. The intervention had a direct impact on academic performance, making academic development part of the study days, whilst having the added benefit of involving the wider educator team in the provision of academic feedback. The introduction of formative presentations allowed students to practise presenting in front of their peers. The practising of these skills, combined with immediate feedback was particularly supportive for weaker students: ‘*I felt less nervous this time. If we hadn’t had the formative experience I wouldn’t have been able to stand up in*

front of people. I would have considered leaving the course' (S14 FG). These comments reflect the anxieties that many students have regarding their abilities and those of their peers, particularly during presentations (Cartney, 2010), and demonstrates the potential value derived from formative practice in developing skills and confidence. A key goal of the pre-course writing assessment and use of formative assignments was to constructively engage with the students at an early stage to support their academic development, a key quality indicator in higher education (Coates, 2005). As Biggs (2003:74) noted, good teaching is 'getting most students to use the high level cognitive processes that more academic students use spontaneously'. The use of formative assessments provided a timely forum to engage with students, allowing them to learn from academically more able students and tutors before their final submission.

The use of formative assessment that allowed students to make improvements to their summative work before submitting it for their final assessment is unusual (Tara, 2006), but was effective because it provided students with motivation and the timely opportunity to learn and hone their skills in a non-punitive forum. Our findings were congruent with those of Gielen et al. (2011) and Mulder et al. (2014) who reported higher levels of student satisfaction and learning when given the opportunity to gain feedback on their written academic work through peer-to-peer review. In contrast to Mulder et al.'s (2014) approach, our students were provided with the opportunity to practise presenting, and then receive immediate collective feedback from both their peers and tutors. This gave students timely and diverse perspectives as described by (Boud, 2000), rather than simply receiving written feedback from a single tutor. This collaborative learning process empowered learners to build upon their existing knowledge, as was evident in the improvement in their academic performance and survey feedback.

These findings demonstrated the value of formative assessment in helping students to not only achieve the standard of required performance (Sadler, 1998; O'Donovan et al., 2008; Shute, 2008; Court, 2013) but also provide all students with greater learning opportunities to improve their academic skills. The problems encountered by Courts (2013) relating to the time-consuming aspects of additional formative work, were overcome by allowing students to practise and receive feedback on the first two elements of their final unit summative assessment. This meant that student effort at a formative stage was likely to have a direct impact on the quality of their summative submission. Divergent to Crisp's (2007) findings, formative feedback did lead to significant improvements in students' marks, with the key being the high levels of timely engagement in developing these skills, with engagement levels rising from 59% to 86% by the fourth research cycle. This increased engagement at the formative stage allowed feedback on structure, flow and content, assisting students to learn at this stage, assisting the weaker students to grasp when they were demonstrating the key skills of applied critical analysis or synthesis. The development of academic skills does not just happen, like all skills it needs contextualised guidance and practice.

The impact of formative assignments on improving students' academic performance was largest in the CCU summative assessment, with referral rates reducing by two thirds, and stabilising to circa 20% for the written assignments. There was also evidence with the results for the S14 cohort (p.278-79) that the formative tutorials were supporting the more engaged students, particularly at degree level, to increase the quality of their academic output. The high level of learning gain achieved through this intervention has been demonstrated by individual student excerpts, and a transformation of high referral rates of 30% with S13 cohort to 100% pass rates for the S16 and F17 cohorts.

The rise in the number of students accessing the programme at master's level was an unforeseen phenomenon, rising from 2% of the students in 2013 to 18% in 2015. Nursing had become an all graduate profession, with the more academically able naturally wishing to challenge themselves at a higher academic level. This created tensions between some of these students and some educators, who perceived themselves as gatekeepers to the programme. This study allowed these tensions to be aired, and changes made to the entry criteria, which removed some of the entry obstacles for students with proven academic ability. However, it remained a source of tension with 14% of students continuing to feel strongly they were denied access to master's level study. This was described by students in terms of '*feeling a bit bitter about that'* (B74); '*My goal was to get a master's. I wasn't allowed to do it'* (B73); and *'I feel people are being held back'* (B71). This recognises the perceptions of these students but it does not mean that all graduate students should access master's study. There exists a counter argument that the filtering process was effective, resulting in a 100% pass rate for master's students by the end of the study.

The focus group interviews with the master's students provided valuable insights. They felt there should be times when they are taught separately, to support their development of master's level skills. This highlighted the differences between degree and master's level education; the inability of our programme to deliver a distinct master's level educational experience. The outcome was the development of a new master's curriculum designed to provide these learners with additional elements, including a wider politic-economic perspective of the specialism, and leadership. Listening to the feedback of these students, a separate poster presentation assessment was developed to provide the opportunity for creativity and originality, followed by oral questioning to probe the depth and range of their knowledge and understanding.

This demographic change had implications beyond curriculum design with feedback from students resulting in pressure on the MCCC to ensure more of the faculty were educated to at least master's level. V: *'The thing that's creating anxiety now is level 7 students. One of the students said to me this time that she didn't feel that she was being allowed study at level 7 because their educator wasn't at master's' level'* (FG).

The changes to the admission criteria meant that students commencing the CCP were all experienced critical care nurses. They were very familiar with practising within this environment, and as a result, expected to explore the care of critically ill patients to a similar acuity as the patients they cared for in practice. This meant the acute care unit no longer fitted within the CCP. There was consensus that from a local educational perspective *critical care meant critical care*. The outcome was a new CCP focused entirely on the nursing care of critically ill patients, which commenced in September 2016.

Contributing to the Education of Colleagues

The success of participatory action research in education is dependent upon the contributions and goodwill of those who willingly participate. The achievements in redesigning the critical care curriculum were the result of collective insights and ideas of experienced educators, whose willingness to listen and embrace this research and the subsequent period of change, was a representation of their passion for critical care education. The MCCC team were in complete agreement that through this action research study they had achieved significant educational gain. As outlined in Chapter 3, action research applies a collective approach, working with colleagues to evaluate our educational practice, and seeking to learn together how to improve our educational provision, rather than striving for generalisable knowledge (Scott and Usher, 2011; Kemmis et al., 2014). This

section will illustrate this local learning gain by using many of the educators and managers' own words, derived from the focus groups with these participants at the end of this study.

The wording for the vision statement that was agreed for the CCP was provided by an educator, and was effective in conveying a simple vision of the purpose of the programme. They had created the first collective agreement on the purpose of critical care education across all key stakeholders within Greater Manchester, encapsulating the need to develop nurses who can apply higher order thinking skills to inform competent clinical practice. The action research process proved rewarding for tutors as they gained feedback on and reflected upon their teaching practice; were better able to identify the basis of their 'knowing'; and developed a range of teaching strategies to better meet the learning needs of their students.

The initial negative stereotypes of the students encapsulated by the statement *'I would say about 50% want to come'* were replaced by optimism, when discovering the consistently high level of student motivation. As one of the educators explained: '*We were thinking that students came because they have to, where the reality is that they come because they want to; they are seeking education'. That has made me view them rather differently*' (V, FG). This change of mind set highlights a major benefit of action research: its inclusiveness, in being able to conduct research with, rather than on the participants.

While one educator expressed resentment of the classroom observations, this was not representative of the educators' experience as a group, with the remaining tutors finding the classroom observations and action research process professionally beneficial and empowering in a range of ways as illustrated in the following excerpts:

C: 'I think what is nice with this is, I was quite new a few years ago and it was all very rigid, and there was no opportunity to change. This is how we teach it and this is how you are going to teach it…So I felt very restricted as an educator... Whereas now I am seeing a different thought process, where you can actually make those changes…I have found it really beneficial to my teaching…We didn't score very well, so I looked at what the feedback, which I found really beneficial…Your guidance has helped us immensely.'

L: 'C's right, it is helped is immensely. We have wanted to change things for ages, but weren't allowed to; it gave us the opportunity to revamp the day…a double-edged sword, it works well.'

F: 'And [we are] *getting a better understanding of how to run a degree programme.'*

C: 'We are no longer restricted as to how this study day's going to be taught.'

F: 'I would like to think your action research now will enable us in the future to carry on with the development of the programme' (PBE FG2, 24/9/15).

C1: 'I think it's getting someone else's take on it. If you've been doing something, you are just tunnelled. It brought some awareness that there are different ways of doing things, and it helps you to see how you can adapt your day to meet the needs of you learners.'

B: 'As you went through the process you realise how beneficial it can be. I didn't think we would change as much as we have. We scored reasonably low at first but we have made it better, and it is so much more enjoyable to teach now.'

D: 'Just having someone external saying that you are doing okay. That meant a lot to me' (FG1, PBE 24/9/15).

There was some evidence to question the belief that action research is performed with, not on participants, and also that the educators' teaching competence was not being measured during observations. This can be seen within some of the educators' comments. However,

this criticism was more than offset by collective positivity, and empowerment fuelled by the learning gain derived by the majority who came to see the merits of the changes and grew in confidence as educators. As C1 noted, *'it has moved us forward, when we may well have stayed still';* supported by N: *'Education is constantly changing and so should we'.*

The areas the educators reported as improvements were representative of the common themes highlighted by the students. The feedback from the observations created insight that much of the art and craft of nursing was previously missing from the CCP, displaced by the focus on the technical aspects of the role. As one educator noted:

> *K: 'I went to a conference and saw somebody sharing their new critical care course. It had all the contents in terms of physiology and the technical aspects, but it wasn't a critical care nursing course. It was all scientific medical based… you forget about the creativity and artistry of being a critical care nurse. And we are now allowing some of that back into the programme'* (PBE, FG, 24/9/15).

There was evidence that peer reviewing each other's study days contributed greatly to the learning as individuals and developing as a team: L: *'I massively enjoyed observing other people's study days. It gave me a whole new perspective on the course…how it all fits together;* N: *'I think for those of us who are not on the marking group, don't necessarily have that overview… so it's been nice to see the bigger picture'*, adding that '*We have never been assessed, never had feedback about this is working or that is working, so I think that's a massive positive of action research, that actually gives us a picture of what we are doing'* (PBE, FG2, 24/9/15).

The teaching behaviour of many of the educators changed dramatically as they grew in confidence, embracing the use of case studies, including using pictures to represent patients and their families. The enthusiasm for teaching following the changes they made was infectious and is illustrated in the following educator comments: B '*Following the patient all the way through, linking what we are talking about back to that patient. And I think it gives the students a more holistic view of everything really; where that theory fits and why it is beneficial in practice;* and F: '*I like following the patient right through from the beginning of the day, to the end, and that is something that we introduced as a result of this process'* (PBE, FG2, 24/9/15).

The educator team transitioned from being split between those who marked the assignments, who were aware of the academic demands of the CCP, and those who saw this as someone else's role, into a team where supporting students' academic development became everyone's business, bringing the team closer together. This represented one of the largest areas of learning and gains from the study, moving the tutors '*from clinical trainers to educators'* (V and U1, FG, 9/9/15). These words encapsulate the cultural and behavioural journey from deliverers of vocational training to becoming providers of higher education. This realisation helped the educators to appreciate the complexity of supporting students with their academic development, as a faculty rather than it being someone else's business to be taught separately. The increase in confidence was gradual, and changes like the introduction of formative assessment greatly helped with this learning: *C1: 'One of my learners said that if we hadn't timetabled their presentation, she wouldn't have come, wouldn't have received feedback that she found really valuable…and there is no way she would have passed'.*

Action research had provided the learning vehicle, the mechanism to engage people in genuinely evaluating the quality of their educational practice, listening to feedback from their peers and students in a way that would not have been possible by the university simply changing documentation or instructing that things change. This was not always a comfortable experience, but as one of the MCCC managers commented *'I don't think they* [the educators] *were going to move away from the competency programme…It has been a slow process…but they've embraced it in the end'* (FG, 9/9/15).

The views of the students towards master's level education were discussed earlier in this chapter. It was clear this study added fuel to a lively debate regarding the role and nature of master's level education within critical care nurse education, but it does not claim to present the answers to this ongoing issue. The section below represents the views of the educators and managers at this time, which illustrates the lack of consensus on this issue locally, mirroring a wider debate over the level of education required for nurse specialists (Watkins, 2011; Cotterill-Walker, 2012).

Critics of the increase in master's level education, such as Aitken et al. (2006) and Hardcastle (2006), have questioned the value of a master's level qualification if it is not matched by a mastery of clinical practice at the bedside. A literature review by Cotterill-Walker (2012) concluded the benefits of undertaking master's education were personal and professional growth, along with career progression for the nurse undertaking this study (illustrated by the high levels of motivation amongst master's students in this study). Cotterill-Walker (2012) also noted that the number of studies demonstrating the impact of master's education on the quality of patient care were 'surprisingly limited', and concluded that the main benefit of master's education may therefore be to the student, not the patient. This

view was shared by many of the educators who felt uncomfortable with students achieving a master's qualification when they were only required to demonstrate a competent standard of clinical practice (rather than proficient or expert).

Conversely, research by Watkins (2011) reported that nurses who completed master's education demonstrated improved utilisation of evidence-based practice and decision making at the bedside. These outcomes were present amongst both graduate and master's students within this study. The improvements in bedside practice related to the way the practice focused content and teaching strategy, rather than being attributed to the level of study. A comment from one of the educators that she felt it there was such a tangible difference in the quality of the students' master's level presentations that led her conclude that in these people she could '*see real promise for the future' [of nursing]* (Appendix 9, F).

The consensus amongst the critical care unit nurse managers was that the value of master's level education was similar. Rather than focusing on the level of clinical practice achieved, they associated master's level study with the educational and professional development required to underpin future leadership roles (Watkins, 2011; Cotterill- Walker, 2012; Gerard et al., 2014). Feedback from presenting at the national Critical Care Nurse Education Forum at the end of the study tended to support this academic view, and provided a pragmatic level of support, with comments such as *'master's refers to the academic level, not the level of practice*', and that it was a '*waste of time to pay for staff to study at level 6 again, may as well study at master's*'. The issue remains a contentious and recurrent theme, which is highly important to students' aspirations and therefore of high importance to nurse education providers, given the increasing number of students accessing this level.

Impact in the Classroom

The curriculum is what really happens in the classroom, and any realignment would need to be evident here if it was to have significant impact. The experience and knowledge of the students increased and the educators liked the difference, noting that students engaged more, and the level of discussion improved, commenting: *'I have enjoyed teaching them more. Great experience, has put it* [critical care theory] *into context for them* (C1) (PBE, FG2, 24/9/15).

Teaching using the case studies linked theory to practice, with feedback that the students consistently evaluated their use positively, with one educator noting that the students enjoying *'working together, exploring the case studies, sharing experiences across the units* [different critical care units]*'* (K, PBE, FG, 24/9/15). The case studies *'sort of brings it to life'* (Z, FG, 9/9/15), providing the bridge to apply critical care EBT to the nursing care of critically ill people and their families; something that was near absent at the start of the study. Case studies were popular because *'the students enjoy getting really involved in the case studies and feel more satisfied when they get feedback that they have done well'* (V, FG, 9/9/15).

The curriculum became aligned to studying the art and science of delivering critical care nursing. The teaching style engaged the students as active learners, practising problem solving, applying theory and making decisions, which were rationalised with their peers. The didactic culture of listen and learn was largely replaced by a constructive pedagogy, which endured beyond the term of the study. This realignment towards a higher education ecology continued by underpinning the programme with a robust evidence base, reflecting the positivist paradigm of contemporary critical care practice (Fulbrook, 2003; Christensen and Hewitt-Taylor, 2006). This hard core approach was married with the softer, tacit, experiential

aspects of nursing, and applied within the context of individual care needs. A ‘head, hand and heart’ approach that bears similarities to the post-positivist design of this action research study.

Knowing is an evolutionary process. It is a result of personal reflection, constructing learning from knowledge and guidance from multiple sources, then considering its meaning when applied to the context of individualised patient care. Critical care nursing practice is dynamic and complex because it deals with critically ill people and requires a high level of applied underpinning knowledge and experience, as well as science to arrive at informed decisions (Rose and Parker, 1994; Baid and Hargreaves, 2015). The educational ecology within the classroom needs to reflect this, stimulating this contextualised thinking in order to help nurses develop into well-rounded, informed decision makers in the delivery of holistic care. As Elder and Paul (2013:1) state, ‘the quality of your work is determined by the quality of your thinking’ when reasoning through the problems you face in your work.

This awareness of the whole clinical picture is particularly important in caring for critically ill patients and their families, where one intervention, such as the decision to bolus fluid to increase blood pressure and improve renal perfusion. This may be the correct course of action according to a protocol, but individual factors such as the presence of heart failure or low albumin, may mean that a different strategy needs to be considered. Evidence-based protocols should support not replace flexible decision making based on individual patient need. Practising decision making for patients with multi-organ failure is required to highlight the strengths and limitations associated with the mechanistic use of protocol-based pathways (Rycroft-Malone et al., 2009). This journey towards ‘knowing’ needed to be taken by all parties to construct the art and science of understanding and delivering critical care

nurse education, developing a balanced learning ecology that embraces academia to drive forward clinical excellence.

Anecdotal feedback from MCCC managers was that the revisions to the CCP were delivering this, with students *'competent more quickly than they used to be. After two years we have some really good staff'* (Z, FG, 9/9/15). At the end of the study, we understood our students and ourselves better. It was a process of reflection and change, leading to increased confidence in our teaching strategies and the knowledge and skills we were passing on to the next generation of critical care nurses.

An ongoing issue of wider educational interest is the paradox that emerged between the use of traditional forms of academic assessment versus the adoption of more innovative forms of assessment that better measure nurses' ability to apply clinical knowledge and skills to bedside care. The effectiveness of formative assignments in helping students to prepare for their orthodox assessment, alleviated the immediate desire adopt more innovative forms academic of assessment. However, the success of the analytical frameworks offers a way to close the theory-practice gap by changing academic assessment into a format that measures the application of nursing knowledge and skills within practice.

This action research study fully met the stated aim of exploring how the uplift to graduate (and master's level) education was impacting the delivery of critical care nurse education. It investigated local teaching practice and informed the implementation and evaluation of educational strategies that helped our students improve their academic development and performance. The unique contribution was to bring together various local voices to inform the development of local (and national) critical care nurse education provision. The research

generated these unique local insights into the delivery of critical care nurse education, that enabled us to develop our educational programme as a team. It increased the collective understanding and insight amongst the MCCC staff, changing the way we deliver critical care education in Manchester to such an extent that the changes remain in place.

Future research is required into the role and purpose of masters' education within critical care nurse education, evaluating the perceived benefits this brings to the individual and to nursing practice. This should include evaluation of the period of clinical experience that is required prior to undertaking this level of education, and whether the qualification should be solely an academic qualification, or as in other trades, represent a mastery of their chosen area of practice.

Summary of Impact

- A single unified vision for the delivery of critical care nurse education within Greater Manchester was agreed.
- Educators transitioned from clinical trainers to clinical educators delivering higher education. They were more confident, using diverse teaching methods, providing opportunities for students to critically apply their theoretical knowledge directly to practice.
- Teaching materials focused on developing students' understanding of the pathophysiology of critical illness, and were robustly evidence based aligning the curriculum with students' stated learning expectations.
- Complex sequential case histories were integrated into the CCP, providing scenario-based learning, with students learning from each other and thinking critically as critical care nurses to develop flexible care solutions for patients and their families.
- These interventions have embedded the sources of knowing that inform the art and science of critical care nursing, as evidenced by student feedback that consistently indicated the CCP was directly influencing their decision making in clinical practice.
- Student academic performance, progression and clinical confidence significantly improved over the course of the study.
- In terms of critical care education, critical care means critical care. A new 60 credit critical care programme focusing entirely on critical care nursing commenced in September 2016.
- A separate acute care unit commenced in September 2016.
- The study has highlighted the local and wider issues relating to the role and function of master's level nurse education for critical care nursing and nursing in general.

Chapter 7. Conclusion: Significance and Limitations of the Research

Chapter preview

This chapter explores the significance of the study to local (Greater Manchester) and national critical care nurse education. It will consider the contribution to new knowledge and understanding, and reflect on how this research has been shared and received. The experience of using action research is discussed, evaluating its contributions and limitations within this study.

There is a cathartic, very personal aspect to action research, representing a learning journey that was personally and professionally rewarding; a story of a group's desire to better understand and improve their teaching practice. On balance, it was less research on participants and more research conducted in equal partnership with participants, a characteristic that was described as essential by Kemmis et al. (2014). There were times, however (particularly with classroom observations), when the transitions of change were slow and improvements in student performance were not evident; when the experience became less collegiate, more fractious and individualistic. The sense of partnership and team was solid at the beginning, then tested at around 12-18 months before becoming very strong as feedback from students became strongly in favour of the changes and academic results significantly improved. Leading such a longitudinal action research study required the patience noted by Biesta (2007) and Gray (2014), and emotional resilience to retain direction and momentum.

It was a considerable challenge to make sense of the volume of data generated, becoming not only familiar with it, but 'steeped' in it (McAteer, 2013:83). This immersion was necessary to analyse it, taking care to retain its authenticity, while synthesising and disseminating it with clarity and accuracy. This process represented a need to continually maintain a clear overview of where we were up to, in order to be able to lead the study. The summaries of evidence produced at the end of each cycle illustrate the critical and logical nature of this action research, asking what we wanted to know, presenting the evidence for what we had already learnt, and then presenting a list of actions for consideration by the working and steering groups (see Appendix 7). This tool was used to verify the authenticity of the information and data, including the classroom observations, with colleagues and this was recorded in the meetings' minutes. The limitation of this format was that it contained vast amounts of information, which were difficult at times for colleagues to easily comprehend; a comprehension that was important to maintain given their involvement as equal partners in decision making and change. Guidance on the requirement and format of similar data sharing models for action research were not noted in the literature, and the summaries of evidence used in this study provide a practical example of how this challenge may be overcome.

The large volume of data evolving from four cycles of action research over two years represented a substantial sustained team effort and required careful consideration to provide the clarity required when evaluating and presenting the results to the MCCC, National Critical Care Nurse Education forum and to conference. This process provided time for contemplation and feedback to consider the wider significance of this study. The summaries of evidence were not suitable for sharing the findings with a wider audience, and here technology offered an effective solution. Interactive charts were created using Apple

Keynote software to share the findings from the four cycles of action research using one slide (see Appendix 8). The transitions within each slide allowed the audience to see the changes in student responses to each question or issue over the course of the study.

This software was particularly effective in disseminating the action research findings on a theme-by-theme basis across the two years of the study. The current thesis submission format precluded the inclusion of such software, which is significant because it provides an example of how the current assessment format can be restrictive, and illustrates the need for academic institutions to keep up with technological change.

How have I Contributed to the Development of Critical Care Nurse Education?

This section will explore the contribution of this research to the local and national provision of critical care education. The development of a shared course vision for critical care education was important to local provision because it provided a unified concept of the type of professional we were seeking to develop: '*competent critical care nurses that have insight into why they are doing what they are doing, using evidence-based practice*' (Lead nurse FG, 6/12/2013). The clarity regarding the purpose of critical care education (agreed with managers, educators and lead nurses) has added importance given the current funding crisis created by a 50% reduction in funding for continuing professional education (CPD) (Council of Deans, 2016; RCN, 2016). Critical care education has not been immune to the removal of funding streams, and further research is required to support the contribution of programmes based upon the National Standards for Adult Critical Care Nurse Education (CC3N, 2016) to critical care service provision. Higher education is expensive, and to protect or regain this funding, the specialism needs to be clear regarding the added value of this in developing nurses and maintaining and improving the quality of clinical practice.

The feedback from students demonstrated the value they place upon engagement with higher education to develop themselves, their careers and most notably the link they consistently made to academic study in not only improving their confidence, but informing the quality of their clinical decision making. Critical care education must deliver on all of these fronts if it is to remain relevant and demonstrate its social, economic and healthcare value to Health Education England and NHS trusts. The gathering of evidence to demonstrate this during this study has meant tripartite engagement with higher education providers, practice and students working together as equal partners, with a shared purpose. There remains a strong motivation to improve the quality of our education for our students and positively influence care delivery. This commitment means reflecting on our educational provision on a continual basis, beyond the lifespan of this study.

The findings informed and improved the quality, focus and impact of our educational provision. The classroom observations illustrated that classroom teaching focused on the technical aspects of critical care, with insufficient attention given to the nursing care patients and their families. The time given over to teaching normal physiology was inappropriate and needed to be spent helping students understand the complex altered physiology of single and multi-organ failure. The desire expressed by students to gain this applied complex knowledge, reflected the learning outcomes contained within the assignments, and its absence represented a disconnect between what was taught and what, with hindsight, we knew students needed to know. These local insights relating to the application of knowledge to the context of nursing practice have relevance to critical care and nurse education in general.

The discussions that arose from the classroom observations helped us to remember that we are fundamentally educating nurses to deliver nursing care to critically ill patients and their families. In educational terms, the publication of Comprehensive Critical Care (DH, 2000) with its notion of critical care 'without walls', combined with the demise of the ENB 100, blurred the boundaries of critical care education. This study has contributed to the discussion of the pitfalls of such an inclusive approach described by Fulbrook (2010), adding evidence that to be effective in meeting the needs of our students, critical care nurse education must focus exclusively on the provision of holistic nursing care to patients who are critically ill.

The research findings were shared at the conferences and with the steering group for the Critical Care Nurse Education Review Forum in the UK in October 2015 (Appendix 11). The minutes from this meeting provide an insight into the impact of this research upon the group, which subsequently had a direct influence upon the development of revised National Standards for Adult Critical Care Nurse Education (NSACCNE), which were published in September 2016. The influence is evident, with key themes and language from the findings of this research identified within the minutes and subsequently present throughout the new standards as outlined in the examples below:

Figure 65. Steps of Competence (CC3N, 2016:8)

Step 1 establishes the entry requirement of a minimum of 12 months' critical care experience (foundation level). Steps 2 and 3 cite *evidence-based practice* as an underpinning programme delivery. Education is delivered '*using the patient journey'* (case studies), problem solving, using examples that reflect the '*multifaceted complexity of critical care nursing*' (CC3N, 2016:8).

Step 2: sets out the learning outcomes, including the development of *higher level analytical skills*, *evidence-based practice* applied directly to the context of clinical bedside *decision making,* and *pathophysiology* appears for the first time in the standards (CC3N, 2016:11).

Step 3: the quality monitoring section spells out a tripartite approach to the continual evaluation of critical care programmes in line with the collective experience and findings of this action research (CC3N, 2016:6).

The impact of this research on the development of these national standards was acknowledged in a letter from the chair of the Critical Care Nurse Education Forum (Appendix 12).

Student Learning Gain

A key objective of this study was to learn how we could better support the academic development of our all students, without detracting from the principle strength of the programme in developing competent critical care nurses. This required a clear understanding of how higher education can support students to gain the required intellectual development, clinical knowledge and skills to allow them to become confident critical care nurses.

The rapid widening of access to higher education, termed ‘massification’ (Melguizo and Wainer, 2015, OECD, 2008) led to concerns over the impact this might have upon academic standards, and how the quality of this provision can be assured. The term ‘learning gain’ refers to the measurable benefit that students gain from undertaking a programme of study, described by the Higher Education Funding Council for England (HEFCE, 2015) as the ‘distance travelled’ or what they take away from their time in higher education. In critical care education, the clinical practice element can be measured using clinical competencies. The student experience of the assessment of these competencies within practice was congruent with existing concerns relating to the overall reliability and validity of this form of assessment (Yanhua and Watson, 2011; Wu et al., 2015). While there may be room for improvement in quality assuring the assessment of clinical competence, the students supported their use and reported gaining confidence from being assessed doing the job.

The quality of academic provision has been traditionally measured by unit grades, progression and student satisfaction rates, such as the National Student Satisfaction Survey. The latter two elements provide key measures that determine university rankings, which have given rise to concerns of grade inflation by universities (Bachan, 2015; Johnes, 2016). In nursing, this would translate as programmes ensuring excellent progression rates to enhance their reputation for delivering workforce numbers through high completion rates. The CCP was not immune to these pressures, with the temptation to improve pass rates by relaxing academic standards without having improved student academic performance; a concern reported by Caruth and Caruth (2013).

These tensions are created because as Clark (1983) noted, higher education is subject to three main forces: the academic community, the government and the market, which are in

a constant struggle to shape the system towards their own interests. The partnership with the MCCC created a middle ground, with clinically-based nurse educators and academics working more closely together as robust defenders of both academic and clinical standards. This partnership was enhanced during the period of this study, with equal sharing of responsibility creating a buffer, capable of resisting university or workforce pressures that could have compromised the quality of the programme. This research demonstrates the value of such close collaborative working relationships between the universities and practice in maintaining and improving educational standards. Critical care education also needs to consider how it can demonstrate the overall 'added value' that students derive from higher education to defend its funding (Coates, 2005).

The focus must be on achieving the end product of developing critical care nurses who are fit for practice because they have completed the CCP to the required standard. This means that through higher education they gain sufficient insight into why they are doing what they are doing, critically evaluating the evidence-based practice that informs their decision making to safeguard clinical standards and patient care. A failure to retain the confidence of practice in the quality and integrity of higher education, given its substantial financial cost, could result in a return to vocational education, which would be contrary to the aspirations of the vast majority of students, educators and managers who contributed to this study.

To be clear, students engage in higher education to develop specific knowledge along with key transferrable higher order thinking skills (Melguizo and Wainer, 2015). In the context of critical care education, this means gaining sufficient theoretical knowledge and understanding to underpin the delivery of critical care nursing. This involves understanding the pathophysiology of critical illness along with EBT, which are applied to the nursing care

of patients with single and multi-organ failure. Students completing a CCP must be competent in caring for HDU and ICU patients and possess the commensurate graduate or master's level skills.

McGrath et al. (2015) in the RAND report into learning gain in higher education in Europe use many of the measures employed during this study. They argue self-reporting surveys provide a proxy measure of learning gain, and are useful when combined with academic performance and overall completion rates. The HEFCE (2015) recognise that grades do not answer all the questions, such as whether we are meeting student expectations and the needs of employers. The national pilot presently being undertaken by the HEFCE is timely as it mirrors much of this research's design, adding validity to our methods including student satisfaction surveys; mixed methods engagement with students to encourage them to reflect upon their learning to '*stimulate productive discussions between students and their tutors';* combined with measures to track improvement in academic and work-related performance.

The establishment of formalised engagement opportunities between educators and students fostered a culture of mutual respect and listening that has substantially improved the quality of the education and the 'know how' of the faculty; a model that continues to inform curriculum development. The other major factor in upholding academic standards and driving forward learning gain has been the collaboration with practice. The standard of critical care education is key to developing a highly educated competent and progressive workforce, who can move the art and science of critical care nursing forward. The proliferation of clinical protocols and pathways have their role in delivering standardised care, but as Rycroft-Malone et al. (2009) noted, they do not replace the need for healthcare professionals to apply critical thinking when assessing each patients' care needs and

making clinical interventions. The initial driver in the study of improving student academic performance was achieved, with the significant improvement in pass rates at first attempts providing a key measure of learning gain. This improvement has continued since the study concluded, with academic engagement at a formative stage now embedded within the learning ecology of the MCCC. This educational strategy has paralleled by the motivation to drive forward students' professional and clinical growth, and ensure the time spent in the classroom and during personal study positively influenced nursing care.

All the key stakeholders supported the view that critical care nursing requires a deep level of knowledge and applied critical thinking, making informed decisions regarding the clinical or professional issues involved when providing individualised care for critically ill patients and their families. This is the reason why critical care nurse education needs to focus solely on the care the critically ill. Further, to be able to engage in such complex discussions, we learnt that students needed to have had sufficient time to become settled and competent within their working environment (minimum 12 months) before they could have the confidence to reflect upon their practice and contribute to discussions with their peers.

The essence of this belief is illustrated by the following educator comments:

E: 'What I have learnt...is that our programme wasn't fully fit for purpose. The reality is that critical care [education] *has got to be critical care.'*

F: 'Students are now wanting to access it from outside Greater Manchester. Students are moving trusts to get on the programme' (PBE FG1, 24/9/15).

The development of a new CCP focused entirely on critical care has allowed greater inclusion of topics such as multi-organ failure, patient rehabilitation and more generic

politico-economic or quality assurance issues that were beyond the remit of the existing programme. This additional content applied and contextualised to critical care nursing better contributes to their personal and professional development within this challenging environment.

The development of the National Standards for Adult Critical Care Nurse Education (CC3N, 2011, revised 2016) continue to represent an important step forward in providing a benchmark for critical care nursing in the United Kingdom. It was strongly supported by all the key stakeholders because it provided a nationally transferrable qualification that delivers competent highly educated practitioners. It is hoped that critical care education providers can benefit from our research experience in developing our curriculum, and help them in maintaining and delivering this national standard of higher education for future critical care nurses.

Faculty Learning Gain

This action research study provided the opportunity to share in and be part of the process of learning within this faculty. One of the key contributions to knowledge we sought to achieve was how best to balance the demands of academic and practice development to support service need and patient care; thereby helping to narrow the theory-practice divide. The balance and learning we shared was achieved by higher education working in equal partnership with practice and students. During this study, the CCP curriculum moved from a traditional didactic teaching pedagogy towards a more contemporary model, where learners were encouraged to participate as active learners constructing much of their own learning. We found that in line with the findings of Everly (2013), our students and tutors both reported increased enjoyment from the new teaching strategies.

A sense of this enjoyment of the positive energy and learning amongst the educators because of being involved in action research is represented by the following post-study focus group excerpt:

L: 'I think giving us an overall picture has been great, because it's been looking at the whole course, rather than looking at your day all day, that's been great.'

F: 'We all have different learning styles. You go and see other people's days and you think "what a great idea", why didn't I think of that!'

The use of realistic case studies was an example of shared innovative practice. The introduction of these had achieved the reported benefit of increasing student engagement in applying higher order thinking skills (Eshach and Bitterman, 2003; Kunselman and Johnson, 2004; Malesela, 2009; Karami et al., 2012). This involved working together to problem solve, applying theory in planning and reflecting upon care delivery; a learning process that was well evaluated by both students and tutors. We did not encounter the problems of student reluctance to participate or of faculty insecurity, as reported by Delpier (2006). This may have been due to the sequential unwinding nature of the case studies, presenting scenarios similar to nurses' daily practice, which allowed the faculty to share their expertise. Feedback from students that case studies should reflect the reality of the patients they were caring for, with multi-organ failure and dynamism, stimulated and sustained their interest.

The provision of guidelines relating to the construction and use of case studies (Appendix 7) were utilised by the educators, who then shared their positive experience of engaging with students as active learners in critically discussing care decisions. The sharing of this

experience with peers improved the confidence of the faculty in their ability to use this teaching strategy effectively.

The effectiveness of the use of case studies moved beyond enriching the learning experience within the classroom (see Herrman, 2002; Ciesielka, 2003; Henry, 2006). It facilitated students' level of critical thinking, requiring them to work together to apply knowledge gain to their decision making in clinical practice in the manner described by Kahneman (2013:43). There was consistent evidence that the changes to educational practice resulted in an increased level of clinical confidence, with 100% of students reporting teaching was impacting their clinical decision making by the end of the study (up from 89% 12 months earlier), suggesting it had delivered actionable intelligence (Johnson-Freese, 2012). There were also significant improvements in academic performance, though the links to case studies were not proven. There were other factors affecting these learning gains including strengthening EBT, but our experience contrasts to that of Lauver et al. (2009) who reported no tangible improvements in student learning from the use of case studies.

One of the most important gains for the faculty lay beyond the professional enjoyment of learning how to better support students to critically link theory to practice. Case studies provided the platform from which they could refocus critical care education around the art and science of meeting the nursing care needs of patients and their families. This was a topic about which many educators were passionate, determined to increase the essence of nursing, including the importance of caring within the curriculum. Our findings support the assertion that to be relevant and effective, nurse education must include substantial learning opportunities for students to relate and test the theory they have learned directly to 'bedside' nursing care. Case studies and discussions allowed tutors and their students to consider

the wider aspects of professional and clinical knowledge within the context of everyday nursing practice (Benner et al., 2011; Bluestone et al., 2013; NHS Education for Scotland, 2013).

In this way, the use of holistic patient case histories and the discussions they generated brought classroom learning to life, with students 'thinking like nurses', rather than technicians. The case histories supported them to identify nursing issues, including the care of patients' families, a key consideration when patients are critically ill. These were important elements of nursing care, which students then related to their academic assignments or practice learning, reducing the deficiencies in classroom teaching that were so evident in the first set of classroom observations. The case studies provided a forum for greater consideration of professional issues, including compassion and communication issues, which the educators had initially highlighted as missing; and in light of the Francis Report (2013) and Keogh review (2014), form such an important characteristic of nursing and therefore nurse education.

There were further possibilities for changing the way we assess knowledge and skills within critical care education that arose from the learning gained from this study. The insights and improved understanding of what was being assessed by academic marking criteria (subject knowledge, understanding, analysis and application to the context of clinical decision making) provided the team with the confidence to develop a new innovative assessment strategy.

A new assessment strategy was developed to measure graduate (academic level 6) knowledge and skills in the new acute care unit (20 credits). The strategy used a criterion

referenced scenario to assess learners' clinical competence within a simulation suite, with outcome recorded on a pass / fail basis (Appendix 13). Students were then given 20 minutes to prepare their thoughts, before oral questioning using standardised questions probing the following: their knowledge and understanding of the patients' clinical condition; higher order thinking skills, measuring their knowledge of the relevant evidence base and professional issues; and the application of these considerations during their clinical decision making in the context of their patients' care. The responses were then graded using an analytical marking framework that mapped the expected quality of answer for each grade bracket (Appendix 14). The model places students in their normal clinical setting, allowing them to demonstrate their applied knowledge and higher order thinking skills in a 'natural' setting.

This assessment has merits that are advantageous over traditional academic synthetic constructs, such as written assignments or presentations. The model was straightforward to use, and provided examiners with flexibility when examining students' decision making and underpinning knowledge, applied within the context of their clinical practice. The tailoring of academic measures to the assessment of real practice, combined with the 100% pass rate at first attempt demonstrated the value of this innovative approach. Knowledge needs to be applied and the success of this assessment strategy suggests that this principle should be applied more widely, making academic assessments more relevant to the context of nurses' everyday practice.

It was a useful addition to the range of strategies used to measure the attainment of academic standards, and the intention is to adapt this to assessing knowledge skills within a simulated critical care environment. This assessment strategy was selected by MMU as a 'good practice' case study video (Appendix 15), which is available as an online resource.

The development of this innovation lays testament to the journey the MCCC team and myself had undertaken since the start of this study; a journey that was not always smooth or harmonious.

Evaluation of the Research Methodology and Design

The experience of using of action research was bitter sweet. There were times when there was great unity and enthusiasm; yet others when there was division, disagreement and frequently self-doubt. The confidence and determination to move forward with the action research was both an asset and at times a hindrance. This was demonstrated by the slow and inconsistent progress with the realignment of the curriculum following feedback from the classroom observations. On reflection, my enthusiasm for change motivated some educators but stiffened resistance in others, which only added to a sense of frustration. The introduction of a peer review process of the study days within the Curriculum Working Group transformed this stasis, by allowing the educators to listen and learn from their peers, and at times be pressured by them, rather than by an outsider. The following excerpt illustrates the resentment expressed by one educator, which is tempered by the more positive views of their colleagues.

H: 'I found it mixed. I have to be honest. There was a couple of times, and oppressive is too strong a word, but I did feel I was being assessed…sometimes I felt we were not being given sufficient credit. It doesn't engender a good feeling…'
L: 'The same for me. Part of me found it really prescriptive, and we weren't really given a choice. But the proof is in the pudding isn't it? You have got some really good improvements and statistics that have massively improved. C's right, it has helped us immensely' (PBE, FG, 24/9/15).

Z: 'I think there was an element of who do they think they are coming in here, upsetting all this, and we turned their world upside down, so there was an element of needing things to settle because they didn't want to change, but they have eventually gone with it.'

This negative reaction felt like a personal criticism, which was unexpected given the successes that were achieved, but it does reflect that it is not possible during classroom observations to a complete observer (Scott and Usher, 2011). The presence of an 'observer' in the classroom is artificial as the teacher will naturally feel that they are being watched and judged. Contrary to the views of Flanders (1970) and our intentions, the experience for many of the educators was that it did feel like a general appraisal of the quality of their teaching. There exists a fine line between a positive critique and veering towards the type of poor relations and negativity described by Hopkins (2008).

Whilst acknowledging that the observations were uncomfortable for some teachers, they were a highly effective curriculum evaluation tool, which worked well within action research methodology. These observations delivered a snapshot of the live curriculum, providing much to hold positive but also much needed insight into the shortfalls of the programme. These insights would not have been achieved without them, which is why classroom observations are such a recognised research method in education. This is reflected in the following excerpt:

K: 'The stuff with the study days worked really well…the development of them has been really good.'
C1: 'It made us think about changing. Whereas before we would just have delivered it the same, rather than considering what has changed in practice.'

A method is only valid if it measures what it set out to measure, and this must include capturing information from a sample that is representative of the population referred to in the research question (Parahoo, 2013:31). The combination of focus groups and questionnaires to elicit representative student feedback was valuable in providing reliable and credible data. The questionnaires allowed us to quantify issues such as the motivations of students for attending the CCP, the importance evidence-based practice to them and their views on how long students should work in ICU before commencing the CCP. This provided the statistical evidence required by the Programme Committee and Curriculum Working Group to make and defend decisions.

The strength of combining focus groups with questionnaires is not widely acknowledged in the literature, but was essential in providing a voice for everyone. Parahoo (2013:322) supports this approach, cautioning when seeking to generalise from focus groups, but supports their use as an ancillary method to surveys. The corroboration of the data from one technique with the other provided us with confidence that we were accurately interpreting the views of our student body. This increased the validity and reliability of the student voice as it could not simply be dismissed as having arisen from one unrepresentative focus group. These methods were so insightful, there was a will for them to become embedded as normal practice at the MCCC. A manager explained the thinking behind this decision: '*we will continue to ask them pre-and post-course…A lot of our assumptions before the start of this study were wrong, and I think some of our assumptions now may be wrong'* (V, FG, 9/9/15). Focus groups provided depth, capturing sentiment, and worked well when merged with the larger volume of responses from the questionnaires, using Likert scales to provide key performance indicators. The use of mixed methods fitted well within the pragmatic and multi-paradigmatic nature of action research and contributes to the ongoing discussion

surrounding how action research is evolving. The use of mixed methods increased the balance, inclusivity and impact of the study, derived from its ability to generate and utilise highly representative statistical and qualitative data.

The socially democratic values associated with participatory action research (Somekh, 2011; McNiff, 2013; Kemmis et al., 2014) provided a constant reminder that we were performing research with people, rather than on the members of the MCCC team. The concern of Kemmis et al. (2014) that action research in education has frequently been used to drive forward prescribed change, rather than resulting in an emancipatory empowering journey has mixed resonance. This research fared well as a representation of collective enquiry and learning because it challenged people's view of current practice, and provided them with a forum to express their opinions in a meaningful and constructive manner (Stringer, 2013; Bryman and Bell, 2015).

It was the openness and honesty of this process that created the development of a new shared understanding, which moved us forward as a team. This is important, because as Whitehead (2002) and McNiff (2013) note, action research is foremost a journey of individual and the collective learning. The achievement of this learning is highlighted in the following excerpt:

L: 'I think that's a massive positive of action research, in that it actually gives us a picture of what we are doing…I suspect, but I don't know, that not all action research goes like this. I think you got a group of people here who absolutely want to make sure this course is the best.'
F: 'We are working better together as a team.'
Z: 'Overall, it's been effective and fantastic. It may be many things contributed to the change, but in the end it doesn't really matter.'
V: 'I don't think it does because everybody's moved forward and everybody's benefited. It's been really positive and everybody's learnt and everybody's embraced the research.'
E: 'We are a long way here from where we were two years ago. We are moving into a new programme and we need to learn the lessons of what changes had significant impact.'
V: 'I think the educators have changed enormously. I don't think they have got the negative views they had at the start of this. And the majority them feel that our students are the people that we should be working for and they are the people who they want to do the best for.'
E: 'I think that's a really good point. I was slightly anxious about the engagement with the HEIs, because our previous experience was very different, and dictatorial [by the University]. *And sitting here, gauging from our side I think the collaboration has been a big success in having people like yourselves, we have developed this as a project between us so everyone is happy. We have progressed. I've learned that you can work with HEIs.'*
U1: 'I think there has been a culture of mutual respect; people are much more open.'
E: 'I think your contributions, you have turned our trainers, from trainers to educators, so it has been mutually beneficial, so credit where credit is due.'
F: 'I would like to think your action research now will enable us in the future to carry on with the development of the programme' (PBE, FG2, 24/9/15).

This positivity requires balance. The desire to embrace a democratic collectivist approach conflicted at times with the recognised pragmatic need in action research to get things done (Scott and Usher, 2011) to the agreed standard and quickly, such as underpinning the study days with EBT and introducing the formative assignments. Participatory action research involves learning together (Whitehead, 2002; Kemmis et al., 2014) as part of a socially

engaging form of research. This was beneficial but to have impact in meeting the responsibilities we had to our students, it also needed to deliver the required changes to the curriculum (Biggs, 2003; McNiff, 2013).

Achieving the level of educational change within this study required a mixture of approaches, including managing the predicted tensions with educators (Elliot, 1991; Karim, 2001) and overcoming resistance. These approaches ranged from democratic agreement to coercion of the educators (by their peers and managers) to participate in sharing their study day materials with their peers. Change can be uncomfortable. This is not a new concept but it is important to recognise that achieving change in action research may not always align to the dominant socially democratic ideal (see Somekh, 2011; McNiff, 2013; Kemmis et al., 2014). In the real world, educational action research that creates knowledge and identifies how to do things better but then does not deliver these improvements, is impotent.

This experience of action research resonates with Lewin's (1946) vision of a process of 'self-management', social good and the empowerment of helping people think and identify solutions for themselves. There is also a realisation that these aspirations may contradict the methodology's pragmatic purpose of not only generating new knowledge and insights but to also resolving issues through action. The experience of this study is indicative of the pluralistic and multi-paradigmatic nature of action research as an evolving methodology. It represents a move away from the socially liberal perspective, where action is less important than the shared experience, towards one where its usefulness is measured against its ability to deliver meaningful learning and improvement within local practice. The success of a post-positivist stance in achieving the goals of this study, nudges action research away from the traditional interpretivist philosophy towards a more pragmatic direction, bringing increased

versatility in the use of varied methods to meet local research objectives. This is a move towards an action research methodology that retains its social qualities of local collective learning but, importantly, this should run in tandem with delivering tangible (measurable) outcomes if it is to achieve its potential. The strands of positivism, represented by quantitative data, strengthened this action research study, particularly for this research audience.

This study has demonstrated the ability of action research to influence and support practice development, and to inspire and engage individuals who would not normally see research as their realm. In this context, it is important for action researchers to draw upon its pluralistic strength, and select the research methodologies and methods that are needed to address the local issues. The experience of this study leads to an ontological stance that does not share the concerns of Katsarou (2016) that post-modernism and positivist values risk undermining the interpretivist tradition of action research. The strength and appeal of action research is its flexibility; the ability to adapt itself to meet local needs (see Somekh, 2011), including an openness to a multi-paradigmatic approach.

Action research allowed me to engage with practice and work collectively, generating varied evidence from practice to inform practice. The opportunity to work with colleagues, sharing critical discussions of how we could improve practice, listening to and learning from the views of others, allowed us to share a collective and yet very individual journey of professional learning. This study has demonstrated the value and versatility of post-positivist and pragmatic action research to educational and clinical nursing practice.

Limitations of the Study

While this study was conducted in a rigorous manner, as with all research it does still contain some limitations. The two-year study did not provide sufficient time for us to fully evaluate the impact of our changes, to judge whether there was consistent improvement in student academic performance and clinical confidence. A longer period would have allowed us time to more fully evaluate the impact of the changes, which perhaps characterises the spiralling character of action research as a form of enquiry that continuously generates data and has the potential to raise new questions.

Mindful of criticism that action research does not employ the same standards as other conventional forms of research (Kemmis et al., 2014:8), I endeavoured to ensure the process was rigorous and transparent. The action research provided a valuable insider teacher enquiry that sought to research educational practice in conjunction with practice colleagues. As discussed, the 'fly on the wall' approach during the classroom observations was not without impact. There was evidence that some teachers adjusted their practice to provide a 'model' demonstration to meet the criteria of the observation, with the risk that they may not be representative of what happens normally. As one of the managers noted:

> *'They made extra effort when they knew you were coming…It does make them anxious, but I don't think that's a bad thing. And I think they think that's a good thing now as well'* (V, FG, 9/9/2015).

The data generated from using mixed methods required timely collation, convergence and analysis to inform often multiple interventions. The plurality of these interventions frequently made it difficult to directly correlate improvements in student academic performance with

any singular intervention or change in pedagogical approach. This formed the basis of one of the major participant criticisms; as one educator commented: *'I think we think with changing the wording of the marking criteria nearly every cycle, and I think some of it, it felt like it ran out of control for a few months'* (V, FG, 9/9/15). This criticism reduced as the interventions began to deliver improvements, but the feeling of entanglement continued: '*all the things we have changed have gone together to make it better. You can't put your finger on any one thing. All of them in conjunction have done it'* (B, PBE, FG, 24/9/16). As the study progressed, this assumed less importance and the impact of key interventions such as formative assignments and the use of case histories became clearer, but it does acknowledge a limitation of the study.

Despite these limitations, the successes outlined in this section increased the collective knowing and confidence of the faculty, and generated new insights, such as the need for a new CCP, all arising directly from the action research process. The achievement of this educational reform on a material and ecological level using action research was enlightening and empowering but, as one educator put it, getting there was '*long and tough'* (C, PBE, FG2, 24/9/15). Returning to Richardson et al.'s (1990:75) statement that 'research is about illumination', this action research study succeeded in stirring our curiosity and imagination. It provided a research method that allowed us to grow together as a team, learning new insights that were so compelling they fundamentally changed the way we deliver critical care education. The main conclusions and recommendations from this study are presented below.

Conclusion and Recommendations

Five Main Conclusions

1. *Critical care nurse education should focus upon the provision of care to patients within high dependency and intensive care (not acute care).* The classroom observations provided the fresh overview of the curriculum that informed this conclusion. The introduction of a twelve-month critical care experience requirement, with completion of the step 1 competencies as a pre-course entry requirement was well supported by all the key stakeholders. This locally driven change resulted in more confident and experienced students, who were better prepared to undertake study of this specialist area of nursing practice.

Critical care nurses must be settled and experienced within their working environment to be able to confidently reflect on their practice, both in front of their peers and during assessments. This standard allowed us to develop a local future workforce who were not just competent, but possessed the depth and range of knowledge and skills required to care for patients in intensive care and move practice forward. Critical care education should focus solely on caring for patients with this level of acuity, providing the opportunity to focus on understanding the pathophysiology of critical illness. This entry requirement has been incorporated into the 2016 National Standards for Adult Critical Care Nurse Education.

A remodelled curriculum has also created space to include contemporary issues such as patient rehabilitation; local and national initiatives that are in place to enhance the provision of safe practice; and necessary insights into the current wider professional or

political issues impacting critical care. This is especially important at master's level, where nurses need to develop a wider perspective beyond the confines of their singular patient or unit, to consider the bigger picture as part of developing future nurse leaders. A new CCP focusing on the care of HDU and ICU patients commenced September 2016.

2. *Critical care nurse education needs to teach and assess the contemporary art and science of delivering humane nursing care to patients and their families.* The supposition at the outset of this study that the dearth of overt EBT in the teaching materials and a lack of critical application of this to the context of patient care was reflected in the sub-optimal student academic performance. In reality, the issues extended to content, delivery and the assessment strategy.

Students consistently cited the value of understanding the *altered physiology of critical illness* (not normal physiology), and the *EBT underpinning practice* as core expectations of critical care education. They also expected to be involved as active learners within the classroom, and associated improved knowledge and thinking skills in these areas with informing their clinical decision making. Teaching needs to facilitate the acquisition of both specialist technical knowledge and higher order thinking skills. This needs to be learnt and applied within the context of delivering compassionate, professional and highly skilled holistic care; developing highly educated nurses who combine both the art and science of critical care nursing practice.

The use of case histories and classroom discussions supported these learning outcomes by refocusing education around nursing care delivery, addressing dynamic and complex holistic needs of individual patients and their relatives, just as they would do at the bedside.

These case scenarios allowed us to challenge our students, helping them to learn from and with each other, critically applying their knowledge and experience when practising their clinical decision making within the classroom. Such discussions provided a forum to consider wider professional issues, including law and ethics. The value of this peer-to-peer learning was a key theme for students. In these ways, we aligned our taught curriculum to the learning expectations and needs of our students.

The development of the analytical marking academic template represented an innovation that aligned academic assessment to grading to nursing clinical practice. It is hoped that in providing a proven template, this framework will be used as an alternative additional strategy that can assess and grade nurses' clinical competence and critical application of knowledge when performing their role within a simulated high-fidelity environment. This approach tailors higher education and its assessment strategies to reflect the practical role, delving into the decision-making processes and mind sets of nurses actually doing their job, rather than continually imposing a traditional essay or presentation format, which have lesser relevance.

3. A change in student demographics was highly evident within this two-year study and nurse education needs to continually evolve to meet their changing expectations. Critical care education providers need to ensure there is a tripartite approach to curriculum delivery and evaluation. This means creating formal systems that listen to and record student (and educator and practice lead) feedback, providing them all with the opportunity to influence critical care education.

An example of this change has been the transition towards a predominantly graduate level intake for critical care education over the last five years, with the increasing numbers

undertaking master's level study effectively raising the educational bar. It was clear that many students saw master's study as a natural progression and were highly motivated to study critical care nursing at this level. It was less clear whether achieving a critical care nursing qualification should be, as in our case, a purely academic qualification or whether it should also, as the title suggests, mean they have achieved mastery of practice as well. This remained an area of disagreement within the MCCC team. A positive outcome from the engagement with master's students was the realisation of just how distinct master's education is from graduate level, and the association of master's education with career progression and future leadership roles. The students considered themselves distinct, and in many ways their learning needs and outcomes were different. It was the feedback from these students that informed the development of a new distinct master's level assessment within the new CCP, consisting of a poster presentation, followed by oral questioning.

4. *Student engagement and formative assignments were key to improving academic performance*. The nurses in this study were well motivated to undertake the CCP and highly valued the academic component within critical care education. It was not appreciated that many students had not undertaken academic study for several years and help with meeting this challenge clearly represented their primary learning need. Higher education providers need to engage with all students pre- and intra-course to assess their abilities and learning needs, providing academic support to help them achieve their learning potential.

Faculty members and students required a shared clarity of the nature and level of skills that were being developed and assessed. A planned programme of education was needed to actively support students to improve their academic skills through methods such as individual support tutorials or practice presentations. Formative assignments with verbal and

written feedback, particularly when used to allow students to practise elements of their presentations in front of their peers, were highly effective in improving student confidence, performance and progression rates.

5. The equal partnership between the university and practice formed the bedrock for improving the quality of our critical care education, ensuring that it remained grounded in clinical practice. Participatory action research proved an effective research methodology for the university and practice to work together in evaluating and reshaping the curriculum. The development of the collaborative CCP on paper in 2011 had been a relatively quick process; changing the education and learning ecology of the MCCC from a training to a contemporary higher education provider required a collective will and greater time. The engagement with educators, lead nurses and particularly our students was enlightening and central to this transition, fostering a culture of learning, trust and mutual respect. It was significant that students, educators and lead nurses greatly valued the contribution higher education brings to critical care education.

The longitudinal action aspect of this research with repeated cycles resulted in some greyness over which interventions were effective. However, the collective intelligence delivered significant improvements in a sufficient range of key performance indicators, most notably a symmetrical rise in both the academic performance and clinical confidence of our students. This provided assurance that as a team we better understood and were meeting the demands of contemporary critical care nursing education and clinical practice. The collectiveness and insights into the strengths and importance of this programme drew us together and made us more protective of ensuring we continue to listen, learn and maintain the standards of the programme for future critical care nurses, patients and their families.

Recommendations

- Critical care nurse education programmes should focus on developing nurses who are competent practitioners within ICU and HDU (not acute care), and meet the National Standards for Adult Critical Care Nurse Education (CC3N, 2016).
- Students need a minimum of 12 months within critical care before commencing a CCP.
- Critical care education needs to ensure the art and science of nursing patients and their families is at the heart of the curriculum. The content should provide students with an overview of critical care provision, including professional, quality assurance, political and economic issues.
- Content must be robustly evidence based (referenced) because this informs nurses' clinical decision making, and also provides an exemplar for the students' academic output.
- Case studies should be considered as a method of linking theory to bedside nursing practice. These are most effective when they were threaded through a study day, sequentially unwinding to reflect real practice: the holistic, complex and dynamic nature of caring for critically ill patients and their families.
- Educators should facilitate peer-to-peer learning; students active in constructing their learning, with opportunities to practise their higher order thinking skills during discussions or when making care decisions.
- Education should be designed to support both academic and clinical learning. Students considered academic output as the area where they most needed support. Formative assignments are strongly recommended because they provide timely non-punitive opportunities for students to engage and learn.
- Competency assessment needs to be rigorous because it underpins students' confidence in their clinical capability.

- Critical care education needs to measure student learning gain, alongside the impact of this education on the quality of practice to demonstrate its value and maintain funding. This area requires further research.
- The role and value of master's education within critical care nursing (and nursing in general) needs further debate and research. Is it a purely academic 'master's' award or does it represent someone who has also demonstrated mastery of clinical nursing practice? Alternatively, is this an academic level of education designed to develop future nursing leaders? As a graduate profession, clarity on this is required to allow nurses to plan their careers and clinical managers to prioritise funding.

Presentations and Publications

Critical Care Nurse Education Review Forum (www.cc3n.org.uk) (15th October, 2015)

On completion of the study I was invited to share my results at the Critical Care Nurse Education Forum (15/10/2015), a national group of nurse educators representing higher education and Critical Care Network Lead Nurses. This group created the current standards for Critical Care Education and being asked to share my research was an indicator that it was recognised beyond the MCCC, and the lessons held to be of national significance to critical care education (see attached minutes, Appendix 9).

British Association of Critical Care Nurses Conference (19th September 2016) presentation 'Transforming Critical Care Nurse Education: Lessons from Action research'.

Royal College of Nursing, National Education Forum International Conference (15th March, 2016) presentation 'Transforming Critical Care Nurse Education: Lessons from Action research'.

Manchester Metropolitan University Post Graduate Research Conference (November, 2014), 'Action research: a view from the front line' shared the experience of using action research.

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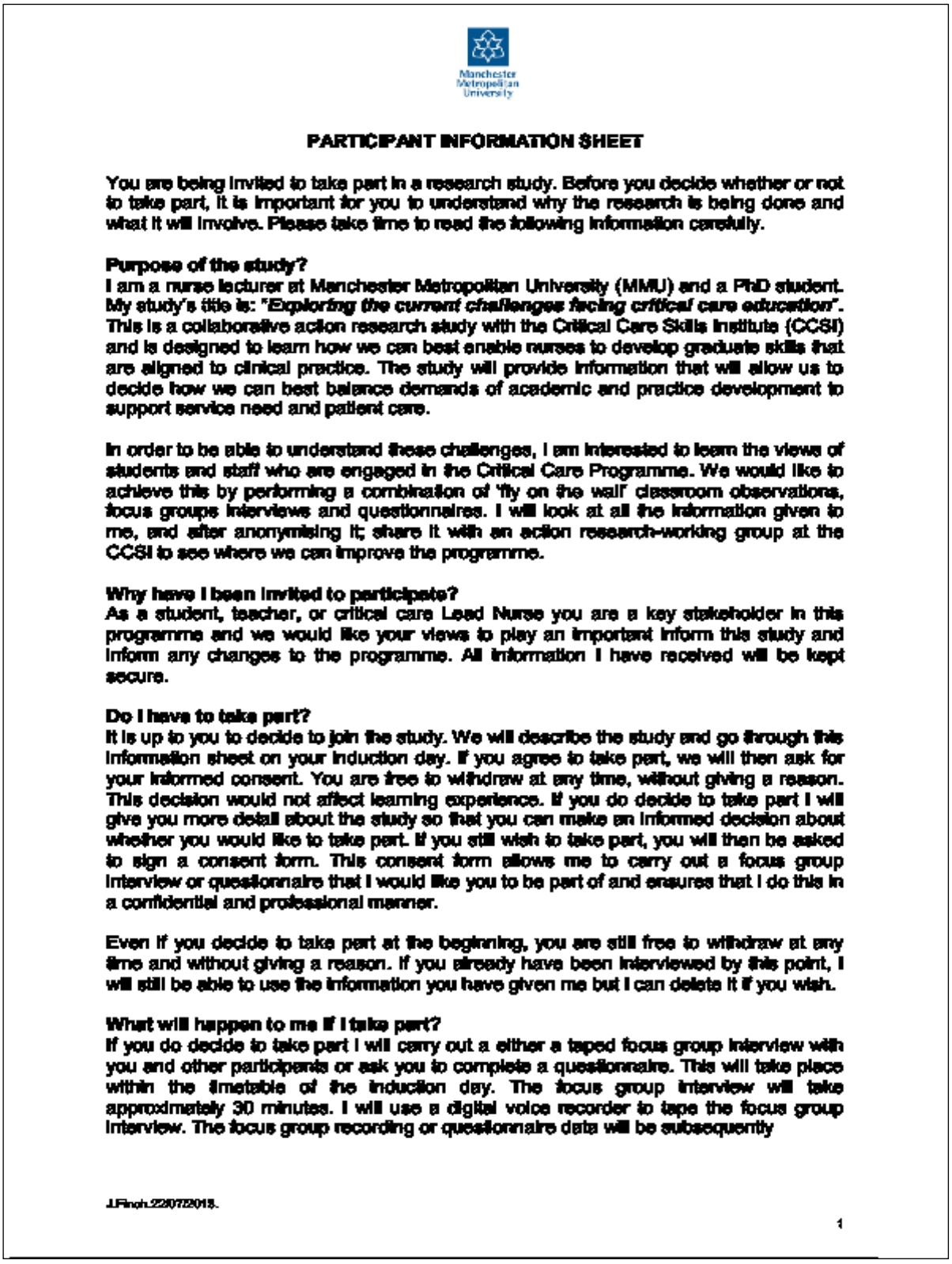
Appendices

Appendix 1. Participant Information Sheet



Manchester Metropolitan University

PARTICIPANT INFORMATION SHEET

You are being invited to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

Purpose of the study?
I am a nurse lecturer at Manchester Metropolitan University (MMU) and a PhD student. My study's title is: "*Exploring the current challenges facing critical care education*". This is a collaborative action research study with the Critical Care Skills Institute (CCSI) and is designed to learn how we can best enable nurses to develop graduate skills that are aligned to clinical practice. The study will provide information that will allow us to decide how we can best balance demands of academic and practice development to support service need and patient care.

In order to be able to understand these challenges, I am interested to learn the views of students and staff who are engaged in the Critical Care Programme. We would like to achieve this by performing a combination of 'fly on the wall' classroom observations, focus groups interviews and questionnaires. I will look at all the information given to me, and after anonymising it; share it with an action research-working group at the CCSI to see where we can improve the programme.

Why have I been invited to participate?
As a student, teacher, or critical care Lead Nurse you are a key stakeholder in this programme and we would like your views to play an important inform this study and inform any changes to the programme. All information I have received will be kept secure.

Do I have to take part?
It is up to you to decide to join the study. We will describe the study and go through this information sheet on your induction day. If you agree to take part, we will then ask for your informed consent. You are free to withdraw at any time, without giving a reason. This decision would not affect learning experience. If you do decide to take part I will give you more detail about the study so that you can make an informed decision about whether you would like to take part. If you still wish to take part, you will then be asked to sign a consent form. This consent form allows me to carry out a focus group interview or questionnaire that I would like you to be part of and ensures that I do this in a confidential and professional manner.

Even if you decide to take part at the beginning, you are still free to withdraw at any time and without giving a reason. If you already have been interviewed by this point, I will still be able to use the information you have given me but I can delete it if you wish.

What will happen to me if I take part?
If you do decide to take part I will carry out a either a taped focus group interview with you and other participants or ask you to complete a questionnaire. This will take place within the timetable of the induction day. The focus group interview will take approximately 30 minutes. I will use a digital voice recorder to tape the focus group interview. The focus group recording or questionnaire data will be subsequently

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downloaded onto a secure university computer, which is password controlled. Only I will have access to these files.

What are the possible benefits of taking part?
There is no personal advantage to the participant in taking part in this study. The benefits are that with your help we will develop be a better understanding of the ways in which we support students to develop their academic skills in a manner that will support their practice, and improve the delivery of critical care education.

Will what I say in this study be kept confidential?
Only I, or one of the other university link lecturers from MMU will hear the information collected from you. All names and identifiable data will be changed to maintain your confidentiality, privacy and anonymity. I will work in accordance with the University's policy on Academic Integrity. As I will be using a digital voice recorder, any of our interactions will be erased as soon as my study is completed.

What should I do if I want to take part?
If you choose to take part, I will go through the consent form with you on the induction day, which you and I will be required to sign. After that, I will negotiate with you the time you would like to participate.

What will happen to the results of the research study?
The results of my research will be written up as part of my PhD studies. I will use some of the information in order to either present at conferences or publish articles in peer-reviewed journals. At all times your confidentiality, privacy and anonymity will be maintained.

Who is organising and funding the research?
This study is a part-time PhD within the Department of Nursing at Manchester Metropolitan University. They have also funded my study.

Who has reviewed the study?
This study has gained ethical approval from Manchester Metropolitan University.

Contact for Further Information
My supervisor for this study is Professor Duncan Mitchell (d.mitchell@mmu.ac.uk). Any concerns regarding the way this study is being carried out should be referred to him. If you have any concerns about the way in which the study has been conducted, he should contact the Chair of the University Research Ethics Committee on ethics@mmu.ac.uk.

Thank you for taking the time to read the information sheet.

Jeremy Finch, Senior Lecturer in Nursing,
Department of Nursing,
Faculty of Health, Psychology and Social Care,
Manchester Metropolitan University,
Manchester, M13 0JA.
Tele:0161 247 2540 Email: J.finch@mmu.ac.uk

Appendix 2. Consent Form

Manchester Metropolitan University

CONSENT FORM

Exploring the current challenges facing critical care education

Researcher: Mr Jeremy Finch,
Senior Lecturer in Nursing,
Department of Nursing,
Faculty of Health, Psychology and Social Care,
Manchester Metropolitan University,
Hathersage Road,
Manchester M13 0JA
J.Finch@mmu.ac.uk
0161 247 2540

Please initial box

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason. ☐
3. I agree to take part in the above study. ☐

Please tick box

	Yes	No
4. I agree to the participate in completing a questionnaire	☐	☐
5. I agree to the focus group or interview being audio recorded	☐	☐
6. I agree to participate in classroom observations	☐	☐
7. I understand that anonymised quotes may be used in publications	☐	☐
8. I agree that my data gathered in this study is stored in a secure university password controlled hard drive until the end of the researcher study period.	☐	☐

Name of Participant	Date	Signature
Name of Researcher	Date	Signature

I understand that data collected during the study may be looked at by the Critical Care Skills Institute, where it is relevant to meeting the aims of this research. I give permission for these individuals to have access to this information once it has been anonymised.

J.Finch July 2013 Version 2

Appendix 3. Ethical Approval

Appendix 4. Classroom Observations: CCU Respiratory (Initial Observation)

CLASSROOM OBSERVATION RECORD

Observer 1: J.Cash	Observer 2:	Critical Care Unit
Study Day 8: Respiratory 3 study day	Date:11/3/2014	Number of students: 7

Directions: For each of the criteria listed below provide a score 0-3 that best reflects what you have observed. Please use the comments section to cite specific examples of the behaviours observed.

	Highly evident 3	Evident 2	Partially evident 1	Not evident 0	N/A (Not applicable to this session)
Learners are actively engaged in discussions		✓			
Materials are underpinned using Harvard referencing		✓			
Underlying pathophysiology is clearly related to the signs and symptoms with which patients may present		✓			
Describes and critically discusses the treatment options (evidence-based)		✓			
Facilitates critical discussion of the role of the nurse in holistically caring for patients		✓			
Facilitates critical discussion of the role of the nurse in caring for relatives				✓	
Facilitates critical discussion of the role of the other member of the MDT				✓	
Uses reflection to evaluate care delivery & inform future practice		✓			
Consideration of ongoing care needs			✓		
Content is linked to the assignment				✓	
			Total score:		19/ 30

Comments & feedback:

Ventilator Assisted Pneumonia (VAP) – a critically reflective account of VAP that challenges evidence- compares & contrasts. A summary to disclose the link to the assignment could be given.

Weaning principles – utilised game of snakes and ladders, student led. Good summary.

Proning – linked to patient scenario – outcomes stated. DVD not evidence-based – sheet for proning 1,2,3 verbal command. Overall a sound session.

ARDS – defined and contextualised. Group challenged clinical application & re-enforcement. Students seem to achieve outcomes. Partially evidenced areas could be improved.

Capnography – session based around Q&A – good rationale for answers. Revision /consolidation session seemed to confirm knowledge / refresh knowledge.

Feedback provided to teacher/s: yes

Any comments from teacher/s

Observer's details. Print Name: J.Cash Signature:

AFTER COMPLETION RETURN TO J.FINCH, PRINCIPAL RESEARCHER FOR CODING AND STORAGE

Appendix 5. Classroom Observation: CCU Respiratory (Revisited)

CLASSROOM OBSERVATION RECORD

Observer 1: J.Finch	Observer 2: -	Date:17/3/2015	Critical Care Unit
Study Day 8: Respiratory		Number of students: 12	

Directions: For each of the criteria listed below provide a score 0-3 that best reflects what you have observed. Please use the comments section to cite specific examples of the behaviours observed.

	Highly evident 3	Evident 2	Partially evident 1	Not evident 0	N/A (Not applicable to this session)
Learners are actively engaged in discussions	✓				
Materials are underpinned using Harvard referencing	✓				
Underlying pathophysiology is clearly related to the signs and symptoms with which patients may present	✓				
Describes and critically discusses the treatment options (evidence-based)	✓				
Facilitates critical discussion of the role of the nurse in holistically caring for patients	✓				
Facilitates critical discussion of the role of the nurse in caring for relatives		✓			
Facilitates critical discussion of the role of the other member of the MDT		✓			
Uses reflection to evaluate care delivery & inform future practice	✓				
Consideration of ongoing care needs	✓				
Content is linked to the assignment		✓			
				Total score:	27/30

Excellent study day. Teaching was linked very clearly to clinical practice via the use of case studies. 4 patient case histories were presented & divided between 4 groups of students at the beginning of the day. These sequential case studies unravelled during the course of the day & students were asked to apply their learning to plan the care of these patients as the day progressed. The day has been developed significantly. Teaching methods have moved from to a more active learner formed, using case studies as planned to link theory to more directly to practice, by providing opportunities for critical thinking, peer-to-peer discussion / sharing of tacit knowledge/leading to decision making throughout the day.

Ventilatory Modes: group were given cards with ventilation modes / concepts on and asked to described these to the rest of the group. The student applied this group knowledge to plan changes to ventilation.
Impact of ventilation on organs: students took an organ & fed back on the impact of ventilation on the physiology / pathophysiology. Included some discussion of impact on ongoing care & wider aspects of care including psychological aspects of care, e.g. patient diaries. **Capnography** – applied to their patient scenarios – good rationale for answers.
VAP – well referenced highly critical discussion of the current evidence base & application of these conditions contextualised within contemporary practice.
ARDS – defined and contextualised & applied to practice. Very well critical discussion & evidence base
Prone positioning – well referenced & evidenced presentation. Some consideration here given to relatives.
Student feedback from evaluations were all very positive rating 4-5 (mainly 5's).

Suggestions: As part of case studies – include more on relatives / MDT, as these are learning outcomes as they are key issues that are currently not being addressed. There are no planned links or discussion of the assignment.

Feedback provided to teacher/s: yes — Any comments from teacher/s

Observer: J.Finch — Signature:

AFTER COMPLETION RETURN TO J.FINCH, PRINCIPAL RESEARCHER FOR CODING AND STORAGE

CCSI Classroom observation record. Adapted by J.Finch from Echevarria et al, (2000) *The SIOP Model.* 03/08/2015

Appendix 6. Summary of Evidence Table. Sample: page 1, question 1

Evidence from fourth cycle of action research at CCSI (January–September 2015) v.3

Q.1. How motivated are the students who undertake the Critical Care Programme (CCP)? What are their personal motivations?

Themes AR cycle 1 - 3

Lead Nurse view. X: 'if someone came to interview & said *'I want to come to critical care but I don't want to do the course, you would not appoint them'* (LNFG, 6/12/2013,Q.3,participant (p).2)

PBE view: Consensus in that the course is 'unofficially mandatory' (PBE, FG2, 22/8/2013, C, Q.1, p.2)
B: 'I would say about 50% would want to come'. (PBE, FG1, 22/8/2013, Q.1,p.1).

Student feedback

- 74-90% Students were self- motivated (S13 & F14 induction questionnaires (100% response rate),
- 10% students in F14, S14 reported being 'employer directed' (n=5) 'it is mandatory because they would question why you don't want to do it (A, FG, 27/8/2013, Q.1.p.2), 'sent from work' (p. 1 -3, 14, 20), 'its mandatory' (p.9,5, 17,18).
- All S14 & F15 students were self-motivated to attend

Students primary motivations include (S13, F14, S14, induction)

I. ↑ Knowledge & skills to provide better care - mean 61%, (range 47-70%)
II. Sent by your employer - mean 13% (range 4-26%)
III. Academic development - mean 19% (range 23-37%)
IV. Career progression - mean 24% (range 20-27%)

Comments from Focus Group 1(26/8/2014, n=9)

A18: I came to be a better critical care nurse & learn some skills, & help me become better
A14: I agree, to become better.
A17: the same really... I felt I needed to attend the course in order to provide the right patient care & know what I am doing
A15: academic development really. The opportunity wasn't there at my hospital, & that was one of the reasons why I chose to come up here
A19: I want to improve my practice. Learning the knowledge behind your practice, give you more confidence in your actual working capabilities

R: 'nationally recognized competencies'- a 'key motivator'–importance of transferability (FG, 27/8/2013, Q.p.1) is a common theme

AR Cycle 4

F15 Induction [28/1/15], questionnaire (n=30)+FG (n=7) [responses 100%]

A. F15 Students are highly motivated to undertake the course:

- 97% of F15 students are self-motivated to attend the CCP. (NB The unmotivated students was sent by their employer)
- Personal motivation rating - mean 4.54 for degree & 4.75 for Masters level students ('0' = no motivation & '5' highly = motivated)

Students primary motivations include

I. ↑ Knowledge & skills to provide better care- 81% (n=23)
II. Sent by your employer 10% (n=3)-
III. Academic development -30% (n=7)
iv. Career progression – 16% -(n=6)

Comments from Focus Group (28/1/15, n=7)

B19:I am newly qualified & in critical care...You learn on the job ...its gaining that greater knowledge of what you are actually doing &that understanding, that's what I wanted to achieve from this. Being able to look at the bigger picture.
B15: It's just putting more knowledge into your skills, relating what you learn to; what you do... if it is too academic you can't actually relate it to actually doing it. I think when you are doing both, when it's 50-50, you think 'I get that' & I can actually use it.
B17: It's quite cliché, closing the theory-practice gap.
B14: This is quite an economical way of finishing your degree off. I did the ENB 100 in 1999 & I must say that it was at that stage when nursing was going through a process of having to prove itself to be academic. So it was very academic & there was very little practical... I didn't personally feel that at the end of it I got very much out of it. The way this course is structured appears to be more appropriate.

But...F14 students who re-sat their presentations commented:

B9: I know we are adult learners & we are supposed to take responsibility, but I must admit I have been quite lazy I think when it's come to the actual academic work. I know the onus is supposed to be on us as adult learners, but I think if you make people bring in drafts".
Moderator: You can't make people bringing drafts. You can set a formative assignment & we will see how that goes...
B12: If you want to work, you will work.
Moderator: how much of your not passing first time was down to not putting enough work in?
B11: About 95%
B10: I didn't feel there was much motivation to do this course, because I've already got a degree & you're doing it at degree level.

What have we learnt & action?

- Students are consistently highly motivated to improve the quality of their nursing practice & achieve personal development. Masters reporting slightly higher levels possibly due to ↑ intrinsic motivation.
- In approx 10% of students attendance is employer directed. Only one student reported they were not self-motivated
- Academic development is important to many students (we need to do better here), alongside career progression
- Nationally recognized critical care qualification is an important motivator
- Statistics & comments are consistent

Actions:

- Feedback to CWG & Lead Nurse representation at Programme Committee (AB & John Logan).

What do want to learn?

- Repeat motivation rating question with S15
- Do M level students have higher levels of intrinsic motivation?

Appendix 7. Case History Guidance

What is a Case history?
Scenarios based on real or realistic cases, which may include 'near misses' delivered as 'slices of professional reality' that help build bridges of the theory practice gap (Errington, 2010:17).

Why use them?
- Puts the patient at the centre of learning (Crofts, 2006).
- Blended learning approach, brings diversity of teaching methods (Henning et al, 2006).
- Provides the opportunity to build upon existing knowledge by providing a stimulus for collaborative learning and the synthesis of theory to practice through *clinical reasoning, prioritisation* and *decision making* (Kunselman and Johnson, 2004, Distler, 2007).
- Encourages all the students join in as active learners, immersing themselves and thinking like a critical care nurses, discussing the issues with their peers to evaluate, rationalise and agree priority of care solutions as they would in practice.
- Its provides time for reflection and application of critical thinking (Crofts, 2006), fostering deeper understanding, bringing together theory with reality (West et al, 2011:577).
- To explore decision making. Can students identify the basis for their decisions? Is the clinical judgement based on intuition, experience or upon EBP?
- Students may realise that most clinical situations have many solutions (Popil, 2011) and discussion of professional perspectives they may not have considered.
- Provides tutors with the opportunity to better assess student's level of knowledge than in a lecture and to correct any errors in professional vocabulary.

Potential Barriers
- Depends on student having a foundation of knowledge and experience, being motivated and actively engaging in learning, rather than passive recipients.
- Pre-existing teacher / author bias narrows the discussion (Popil, 2011).

Guidelines for use
Present a real life case history that provides sufficient detail to reflect the scope of professional practice and meet the stated learning outcomes. These learning outcomes should be aligned of the study day and also the programme as a whole.

Each case study needs a clear purpose, illustrated by learning outcomes. A generic set of learning outcomes will provide a basis for this, to which tutors can add any specify details:

Generic Learning Outcomes for Case Histories

Learners will:

A. Demonstrate a systematic and holistic assessment of the patient's needs

B. Demonstrate a critical understanding of the underlying pathophysiology, linking this to this patients signs and symptoms

C. Critically evaluate the treatment options, utilising best available evidence to justify and defend decisions (consider how C&B interconnected)

D. Considers communication with family and MDT

E. Consideration of ongoing care needs, including patient outcomes (good or

1 3 April 2014

Appendix 8: Focus Group Interview Guide

FOCUS GROUPS

At the start of each focus group (size 3-12 participants)

- The moderator must set out and agree ground rules with participants

Set:

- Purpose is to explore your views on the current critical care programme and how you feel we can meet the challenges facing critical care nurse education in this transition towards an all-graduate profession.
- Participation is voluntary. You should all have received information sheets & consented- confirm this.
- You have been selected because they are key stakeholders.
- "Your opinions are important to me, all I want to know is what you think- this isn't a test and there isn't one answer to the questions I want to ask" (Hopkins, 2008:111). It is important to learn all your views.
- Views are expressed in strict confidence, ask them to agree to respect each other views, not interrupt other participants when they are speaking (speak one at a time please as we are recording) and maintain confidences.
- The interview will last about an hour and will follow a set pattern of questions
- I hope these questions will stimulate discussion amongst you. I will not be contributing to the discussion, my role is to moderate and facilitate (Breen, 2007).
- Set the group at ease participants to state their first names at start to assist transcription.

Dialogue: Moderator role is to remain neutral on the subject matter, interjecting to seek elaboration, guide the flow and yet retain focus or correct any misinformation (Krueger,1994).

Closure:
At the end of the focus group
Do you think we have missed anything?
Summarise the views at the end of the interview, which allows the participants to verify or correct your account, and provides a succinct record Hopkins (2008:110).
A consensus is not required.
Thank them for their contributions

J.Finch. 21/8/13

Appendix 9. Transcription: S13 Post-course Focus Group

Post-course focus group with S13 intake of students performed on 29 August 2014. Location: MCCC.

Moderator: Jeremy Finch. Participants: B71, B72, B73, B74

Moderator: Today is the 29th of August 2014. We have a focus group with September 14 who were just finishing their critical care programme. I will explain the ground rules. I want to find out what your views are regarding the critical care programme, participation is voluntary. You all signed consent forms when you started the programme. I want to know what you think. I want to know your gut feelings about these questions. There is only me who gets to listen to these recordings, then I'll transcribe them and code them, and then share those themes, so you can say whatever you like and it will be held in confidence. I would like you all to participate. My role is to facilitate the session and listen to what you've got to say.

Q.1. Have you achieved the knowledge and skills you expected to develop as a result of attending this course?

B71. Yes, I feel that the content has been there. I feel like the A&P has been really useful, I have not looked at it for years and years and I feel like it's been really useful.

Moderator: How long you've been qualified for?

B71: 10 years

Moderator: How long have you worked in ICU for?

B71: 10 years [laughter]. I feel like it so long ago. You don't revisit it, but you should. So I feel that the content has been there and everything.

Moderator: So the A&P has been good. What other knowledge and skills are you taking away with you?

B74: Being competent [laughter].

B71: I'm quite pleased to come back into university and to study, and then to write an assignment.

Moderator: And do a presentation!

B71: I guess it's quite nice to be able to do a presentation in the small group like this, because later on in your career they may be to a lot more scary people.

Moderator: These are the transferable skills aren't they?

B71: Yeah, so much as we all dread it, they're useful skills to have.

B74: I found the competency booklet good, the skills that are going through that. But I found some of the lectures quite patronising in terms of the knowledge base you are assumed to have, which was that we didn't have any.

Q.2. How long have you had on ICU before you started?

B74: Two years qualified and this is my first job. There are aspects of it that I found really useful, and aspects of it I knew about already and didn't need so much information.

Moderator: I think part of the issue is in the past people have come on the course with between three and six months' experience. We're saying that they will need to have at least 12 months' experience within ICU, so that will raise the bar and hopefully allow us to raise the bar in terms of what we teach and the way we teach. I asked the students what they thought. 75% thought students ought to have at least 12 months' experience on ICU before they commence the course.

B71: I do know some qualified staff come on the course and they just felt that it has gone over their heads. If you've just started on ICU you've got enough on already without going on the course.

Moderator: It was being used by some places as like her induction course, a preceptorship course was new staff to ICU.

B73: I think I agree with some of the opinions. It's been good to go over some of the A&P stuff but I think in general it has been oversimplified, and I think in ICU you expect more than you would from a ward nurse in terms of the anatomy and physiology. It is difficult, because in terms of for instance haemofiltration, you have the haemofiltration companies doing teaching on the individual units. If I hadn't done this course, I would still not know how to use a haemofilter and a balloon pump.

[5.20]

Moderator: How long had you worked in ICU before you started?

B73: I had six months before I started and done nine months on another ward.

B74: I came from 2 1/2 years in cardiology, so it is a little bit high dependency. I found that when I started the course I had to learn everything in the supernumerary period. I only had 4 to 6 months experience on ICU before I started. I wasn't begrudging get on the course, because on other trusts you won't get on. I wish I had a little more of a settling in period before starting this course.

Q.3. Overall, do you feel you achieved the knowledge and skills that we expected you to do at the start of the course?

B74: We should have more time to do more reading. It's hard when you're working full-time and you have got other commitments as well. Felt like I neglected it a bit. And then you go from the acute care straight into the critical care programme.

B73: I think it is difficult. You are supposed to do pre-reading before the study days and I think half of us didn't really do that, because I'm working full time. I want a social life, I've got family; I have got kids and wanna go away on holiday.

Moderator: Do you think you got the knowledge and skills you expected to gain from this course?

B71: Yes it has consolidated a lot of the stuff

B74: Yes, I agree it's consolidates a lot of the stuff and provides the experiences.

Q.4. Were the study days useful in developing your clinical practice?

B71: Yes. I think the A&P has been really good it just helps you understand what you do all the time, helping you to understand why things happen.

B74: I think probably the A&P as well. I found it really useful when we'll talk to people at different trusts and find out what we all do, I always found that quite useful when we compare and be able to ask why do you do that. It's just interesting to get a different perspective.

B72: You just get competitive with each other.

B71: I found myself defending the MRI [laughter].

Moderator: So we've had A&P, which you found useful. Is there anything else?

B72: Guidelines, the evidence base.

Moderator: You mean evidence-based practice?

B71: It reassures you, that you're doing the right thing. That's the worst thing that someone will pull you up and say what are you doing? You're not following any evidence-based practice. It's a way of justifying what you do.

Moderator: Speaking to people from around the trusts, finding out what they do, must give you confidence.

B71: I think especially when you are new to ICU, you could be persuaded by people who have worked there for a long time, don't do any reading or keep up-to-date, who just do it because it's habitual behaviour. It gives you a way of challenging things like that I suppose.

[10.41]

Moderator: So that's like the content of the day isn't it? We are trying to focus more on the pathophysiology, because you can learn the A & P yourselves.

B71: I think sometimes the days can be a bit full-on, because they are long days and sometimes you feel like you just can't fit anything else in your head. Not really the teachers, but I think sometimes it'd be nice just do something practical. Like prone positioning. If you would split into groups and we had to prone each other, that would be really good something a bit more hands-on.

B73: I think sometimes it's been really heavy teaching all day and then we get to the last bit and it's like a case study, and you know what you feel like? I can't be bothered, and you feel like I just want to go home.

Moderator: Well one thing I am trying to do is to get the tutors to use that might break this up, is complex case studies. These will give you an exemplar introduction to the patient, like we've asked you to do here [in their presentations], then we provide you

with the signs and symptoms of a patient and ask you to tell us what you think is going on with the pathophysiology.

B71: That would be really good, I'd love to do something like that.

B74: That will get you to use your brain.

B71: I think also practical things, maybe not staff who are new to ICU, but we could do practical sessions where they asked us to get ready for a setting up for something, to get the equipment ready, to practise as a team. It may be a difficult intubation, where you say 'what is your role, what equipment are you going to get, what are your priorities?'

[15:00]

Moderator: Case studies should be problem-solving. If you ask the questions or request for investigations, you will get the answers, just like in real life, which would link more to your assignments as well.

B71: I think linking it more to the assignments, looking at what we are doing, I quite like that.

Q.5. Were the study days useful in helping you with your academic assignments? Do you feel the assignment briefs were clear and you feel like you got support to achieve them?

B74: I am surprised I have passed the other assignment actually.

B73: I think in terms of the presentation, you don't know how many slides you need and how in depth you need to go on the A&P, and you think how deep do I need to go? Do I go down to cellular level?

Moderator: That's why we are asking the academic tutors to support you. Did you send in any drafts? [Pause]. We are going to bring in a formative assignment, which will

include the first two marking criteria, which will be at midpoint and we will give you written feedback.

B74: You see that would be good to me, because I am dyslexic, and that would help with confidence. You lack a lot of confidence when you're dyslexic. I haven't really spoken to my academic tutor, as I just don't feel confident enough to speak to people about my work.

Moderator: We will require people to present a formative assignment which will make up 35% of the total and will provide written feedback.

B72: That would be really good.

B73: I tend to be last-minute, and need that pressure.

Moderator: With this you will get that pressure in the middle, rather than all at the end [of the unit], because you will have to hand in a formative piece of work by a certain date

B71: I think the marking criteria is really clear, and you get given that early. I think especially in the acute care unit, the way the lectures were presented matched up with the assignment criteria. I didn't realise that until halfway through, and I suddenly thought, 'oh my God, they match up'. You're like doing an assignment every week without knowing it.

Moderator: How important is the evidence base to you?

B74: I would say 'essential'.

B72: They are essential, that's what we're supposed to do

B71: It's always backed up with evidence, there's a list of references that the end

[20:20]

Moderator: I am going to get them to put the references on the slides as well though, because when you see them on the slides then you will follow the example when you do your presentations.

Q.6. Has attending the critical care programme influenced your clinical decision making?

B71: Yes, I think so. Just the things you've done for years, things that you just do without thinking why you are doing it. There hasn't been anything that I spotted that I've been doing wrong for years and years. It's just been nice to find the rationale behind why you do things, I have found that really interesting.

B72: I think it's just like B71 said, subconsciously you have learnt things. To really know the evidence behind why you do things. So now when I do a task I don't think I'll I know why I do this, but I would be able to explain more why do it in a certain way.

B71: I think it also just spurs you on, because you think to yourself why have I been doing things like that? It is definitely made me think about why I do things more

B72: Again it comes back to listening to people from other trusts and learning what they do.

B71: Yes that's really useful.

B72: We all share the same evidence base and yet different units do things in different ways. I found that quite interesting.

B71: I just like hearing other people's stories about patients and their experiences. I could listen to xxxxx all day, from neuro, she was fantastic.

Moderator: Has attending the critical care programme influenced your clinical decision making? [All nod affirmatively].

[22:25]

Q.7. Has attending this degree or master's level course helped you to achieve your personal or professional goals?

B71: I feel really relieved that I finished it and that I can still write assignments and do a presentation.

B74: I am the opposite. I haven't done it for a while, and when I did it before, I was a lot better. It must be an individual thing.

B72: It has made me realise that I have lost a lot of the academic skills that I had.

B73: I think it is annoying. When I initially started the course I wanted to do master's level. I think it's really good to those people who don't have a degree and have got the credits to go towards that. My goal was to get a master's. I wasn't allowed to do it at master's.

B74: I wasn't allowed to do it at master's either. Why do a course that has no academic value to me? I feel a bit bitter about that.

Moderator: That's an issue that we are looking at. One of the problems is that there was a big jump between degree and master's level, and if you do not pass then you have not got your critical care course. Degree, and when you step up to master's the pass mark is 50% and the increase in your depth and range of knowledge required is much greater. People do not always appreciate that.

B74: But the annoying thing is that because is that I already have a degree and I need a master's, but I can't use this course.

Moderator: If you have a degree, then you can move onto master's as far as the university is concerned, it is not an issue at all. The problem is though, if you got 40% or 50% marks in your degree when you step up to master's the pass mark is 50% and the scope and the depth of your knowledge is that much wider. People starting the course and don't always appreciate that.

B74: We didn't even have that discussion. One of my arguments is that why don't I just wait for another year before I start the course?

Moderator: Now before you start the course you have to have a minimum of 12 months' experience. I have just been talking to the lead nurses about this issue and we were discussing if nurses would need 2 years' experience if they wish to do a master's level programme? So you will be expected to think about things like what is the prognosis, the co-morbidities, and have a wider appreciation perspective of patients' overall conditions, and the wider issues involved in the care. That is the thing about level 7; it requires a greater degree of knowledge.

B71: There are so many people saying that there is no point doing it at level 6 [degree]. I would rather just wait to do it at level 7 [master's] and I feel people are being held back.

Moderator: On the last cohort, we had 10 people at master's [February 2014], and now seven people out of 40 in September 2014, which is a quarter of the students.

B74: Yes, I felt I was pushed onto this course. Even though I said I want to do it at master's I was pushed on to degree level course [at level 6].

Moderator: A view from your work side of things may be conservative, concerned with developing the workforce and making sure that enough people complete the critical care course successfully. Then there is the university perspective, who think it's all education and therefore all good, and then we have got the MCCC stuck in the middle

B71: I totally see where the issues are. Everybody needs to get through this critical care course and they [the critical care unit managers] can't wait two years for everyone to start the course at master's level, but it has been really frustrating, if you already have a degree.

B74: Totally!

Moderator: Some mixed views on that issue. It's good to get your views because it's an ongoing discussion and they can be fed back.

Q. 8. Has the presence of academic study within this course helped you to improve your nursing practice?

B73: I guess so because you have to know why you're doing something, look at the evidence base, and research. I think if you're taking up a link nurse role in your area it's getting you back into the habit of being more academic. I guess if some of us want to progress to band six and seven, then it is getting all that stuff academically.

Moderator: Having spoken to students previously, I have found them to highly value the academic side of the programme. We did think about offering the programme with a non-academic option, but it wouldn't be transferable nationally. The National Education Critical Care Standards stating that you should have 60 credits at level 6 or level 7, plus the competencies. This is the national standard for the critical care course, so you will be able to transfer this course as a qualification anywhere in the country.

B71: Are they going to make it compulsory that you have to have the critical care course in order to work in ICU?

Moderator: When you speak to the lead nurses they view it as compulsory that you do the course, when you speak to the students who are starting the course they say that it was mandatory for them. When they are employed at interview, they are told they have got to do the course.

Q.9. What did you learn most from, doing the written assignment or the presentation?

B74: I thought the presentation was a lot easier than the assignment.

B73: Yes I would agree, because I like presenting.

B71: Both.

B72: I've struggled with both of them really [laughter by all the group]. I learnt more from the assignment. I struggle with organising academic work.

Q.10. Has attending this course improved your confidence as a critical care nurse?

If we could rate it, with zero being no improvement of confidence at all, and five being a very high level of improvement, where would you place yourselves?

B74: About four.

B73: About three or four, it has improved my confidence.

B71: I think it really has, maybe because I've been chasing the dream of do the critical care course for so long.

Moderator: Give yourself a score.

B71: Five.

B72: About two or three.

Question 11. Has it made you better critical care nurse?

Moderator: Using the same scale, has the course made you better critical care nurse? How would you rate your level of development as critical care nurses?

B72: Three.

B73: Four.

B71: Five.

B74: Four.

[31:51]

Q.12. What has been your experience in relation to the assessment of your competencies in practice?

B73: People don't know they can sign the book, if they can't sign the book.

B71: I got the list from xxxx to put in the back of a competency book.

B73: But they won't do it.

Moderator: What was your confidence like in the actual process?

B72: I think the new competency book is absolutely ridiculous: the pre-course competencies.

B71: There is no way that they are going to get it all signed off, there just isn't the time.

B74: I think if it was me, I would just look at them all and think I can't do it

Moderator: So you think it might take longer than 12 months to complete stage 1 competencies now?

B71: One of the sisters sat down for hours just to complete one page. There just isn't the time.

Moderator: What do you think about the actual process in terms of robustness? Do you feel like you all signed off appropriately and you are now competent? [All students nod in agreement that they do feel the process was robust and they were signed off appropriately].

I guess that's the main thing that you do all feel that you are assessed rigorously enough to feel that you were signed off fairly as being competent.

Question 11. Is there anything else that we've missed? Any changes that you would like to see us consider to make to the programme? Any positives that you'd like to pass on to the staff?

B72: The standards of teaching was very good.

B71: I think that most of the tutors on the course were very good very interesting.

B72: the thing that I didn't like was the transfer study day.

B71and B74: I liked that!

B72: I felt lost.

Moderator: Do they presume too much knowledge before you started?

B72: I think they do, because there was such a range of experience, and I needed a bit more background knowledge. And then we had the scenario and that guy was mental.

B71: He was well in the role.

Moderator: Is anything else you'd like to pass on? [Pause for three seconds]. Are we all finished then? [Nods of agreement].

Appendix 10. Transcription: PBE Focus Group: Post Study

Duration: 74 minutes.

Moderator: Jeremy Finch. Participants: L, C, F, E, J, H. The standard focus group ground rules were explained prior to commencing the discussion.

Q.1. Looking back over the last two years of the study, what you think we have learnt about our students?

C: I think we see a lot more confidence in a lot of the students.

F: They are a lot more aware of the content and of the programme. I think initially they thought it was a bit of an easy ride, but I think now they realise that it is difficult and they have got a certain level to achieve.

C: Looking back to 2012, I don't think they had a full awareness of what was expected.

Moderator: What have we learnt about their [students'] learning needs?

H: I think it has been quite an organic change in education. Universities have changed their approach expecting students to be far more proactive, so it has a lot to do with what is changing in higher education, I think we have responded to that. I think we have been in a dynamic situation and with our course changing in line with the wider changes in education.

Moderator: They were 70% diploma students and they are not now.

H: It's that old adage: better student makes a better teacher. You have to up your game to meet their expectations.

F: There was the realisation that the course is not easy. Most of them are graduates, they have seen some of their peers [at master's level], not be very successful, and they don't want to follow that path now.

H: You see I have had the opposite experience. I have three students for the next intake who all want to do master's, which poses its own challenges.

C: Some of my students have seen how challenging master's is and I decided to stick at degree level.

H: A lot of our students were on the xxxx course at master's level before commencing this course, so it has changed the landscape.

L: Pretty much the same. I still think there was a misunderstanding, between the differences between degree and master's, with some students thinking it is an automatic right, because they have a degree and therefore should do master's. When you look at the quality of their work, it doesn't match up. There is also the difficulty with students who come from other countries, because there is no way of gauging their ability. In many cases the first indication we get is that student assessment, so it is not always a smooth process. In their heads they think they have a right do master's, or they don't understand what it entails and they haven't got that clinical background knowledge either. They may have the academic skills, but what is the content going to be like if they've only been in practice 12 months, so have they actually got the clinical development needed to write at master's level and produce a good quality assignment?

F: Many haven't.

Moderator: That is why bringing in the 12 month experience entry criteria was a good idea

L: They have this image of themselves at master's, but clinically they are no better than anybody else. There was a divide coming about on the shop floor, with the 'well I have got my master's'. The competencies don't match up [reflect master's level] and that's my issue.

H: I think it's quite interesting, because I don't remember that divide being so obvious. I know they are creating it [master's qualified staff]. I don't think when they bought in degrees there was that much of a divide and antagonism, as there has been with the introduction of master's [critical care education]. I don't know if that's naivety or a reflection of others being old?

J: That's the same in pre-reg [nursing], because at our trust the master's level student nurses don't want to mix with a degree level student nurses. They want their own groups.

F: In the classroom, I just see them as a group of students. I don't see them as degree or master's level students. When they come to present we separate them.

L: I have to say, that my experience of watching the level 6 and level 7 presentations, and wasn't really a lot of difference. I couldn't see where there were differences.

F: Well I have to say, I have seen a clear difference this time, a clear difference.

L: Where does that difference come from?

F: I think it's coming from experience.

L: These people doing master's level education do not have higher clinical skills, they may have academically, put them out on the shop floor and there is no difference.

F: But information they bring to the presentations, they synthesise it and I think that shows through, what with them with that information, what they have done with that knowledge, some of them have already initiated things [changes]. This time, with the presentations you can see real promise for the future [of nursing].

L: I agree with the presentations, but when you look at them on the shop floor there is absolutely no difference.

Moderator: If you're looking at general transferable skills, they may not be things that come out when looking at the bedside; they may come out later as they progress. If I just summarise what's been said: the students' expectations have changed as they are increasingly degree students and master's students, and their expectations are different.

I: The students who have engaged in practice in achieving their competencies, I would have no qualms about what level they access the programme at. I find it hard to believe that some of the students who come on the programme, after listening to their questions, have engaged properly to achieve the step 1 competencies, when they don't know the difference between a neurone and nephron. I can't see how they have engaged.

C: In the classroom they don't always demonstrate they have the level of knowledge they should have from completing the competencies.

[17:35]

Moderator: One thing is that gives student's confidence is knowing that they have been assessed at the practice. Students to make that link.

Q.2. What has been your experience in relation to the use of classroom observations?

C: At first I thought I don't really like it. On reflection I found it really beneficial to my teaching and to the study day, because it guided me to the right way of delivering that study day. We didn't score very well, so I looked at what the feedback was, which I found really beneficial. So for me it really helped.

H: I found it mixed. I have to be honest. There was a couple of times, and oppressive is too strong a word, but I did feel I was being assessed, and sometimes I felt that I ended up, there was a couple of times, that as a subject expert, I thought that it wasn't good points.

F: I don't know if it's because I was missed the very early part [in the study]. I agree with a lot of what H has just said, it is very good towards the academic side. Some educators [PBE] changed a lot of lessons based your criteria and some didn't have wait to change, because they benefited from the changes that we have made as a result of feedback. So from that perspective it wasn't equitable.

H: We were able to change ours after hearing your feedback, such as adding references.

F: We have to put in a lot of work in to meet your criteria.

J: I didn't feel when the review came it is appreciated how much work I put in to try and improve the day.

F: Now it's running and established it seems okay. Maybe all that work effort was worth it because it does seem to work.

Moderator: It does take a lot of work to change things, and I wouldn't like someone to come in and sit in on my presentations. It is hard work and we don't like it.

J: Yes but for me, it was still very dismissive of how much work we had put in.

H: Sometimes I felt we were not being given sufficient credit. It doesn't engender a good feeling.

F: We were trying to fulfil the needs of the national standards, these and also the academic aspects. With a foot in both camps, and it's hard to balance.

C: Your guidance has helped it immensely.

L: The same for me really. Part of me found it really prescriptive, and we weren't really given a choice. But the proof is in the pudding isn't it? You have got some really good improvements and statistics that have massively improved. C's right, it has helped is immensely. We have wanted to change things for ages, but weren't allowed to, so it gave us the opportunity to revamp the day as what we want to do. We scored really poorly initially, so it gave us the evidence to change the day. The double-edged sword, it works well.

F: It has improved things.

Moderator: Is there anything overall that you will take away from the process?

L: I massively enjoyed observing the people's study days. He gave me a whole new perspective on the course. Although we're always welcome to sit in on other people's

sessions, just didn't have time. I massively enjoyed that. It's changed my perspective. Seeing other people's study days has shown me how it all fits together [the programme]. Quality is amazing, so I know what they're getting.

F: I like the way we use case studies now. I like following the patient right through from the beginning of the day, to the end, and that is something that we introduced as a result of this process.

L: That [case studies] doesn't work for every study day.

F: I know it doesn't, but it's just something that is working well for us. We wouldn't have done that kind of thing before.

L: I love the use of them in some days.

Moderator: I enjoyed watching all of the study days, and going to and seeing them again. Not so much the contents, because I forget get that. I saw the programme as a whole. And I may be the academic lead here but I haven't seen the programme as a whole, and doing so changed my perspective on it. Seen them all together in sequence, altered my perspective.

C: It was seeing everybody else's study days, you thought I can pinch that idea. I think we gained a lot from each other.

F: We use varied learning styles to meet the learning needs of every student.

[33:24]

Q.3. What do you think are the most valuable changes that we have made?

L: From a personal perspective I think that if I went on to our unit and said to somebody do you know the current changes relating to the acute kidney injury, and where it's coming from they will have a clue, as people are out there that aren't doing this kind of course. They don't know the background, and our students do now. They're getting that background knowledge about where things are coming from, where these ideas come from, and I think that's great. We are breeding a type of nurse now that thinks, okay were bringing in this screening tool, where is the evidence to support its use? My generation of nurse didn't do that. You could do if you wanted and that was great, but it wasn't expected.

F: And they get to learn what learners are doing at other trusts [during the case study discussions].

L: And that's good because they get that mix. I think that's a really good side of it. I think it's great. Don't just go and learn how to do a task, go and learn where that's come from.

H: That's coming from bottom up. There are quite significant education changes, been reflected in the changes to our program.

L: So I like that aspect of it. I don't think had enough of that in the old course.

F: It makes us get our finger out, looking at the current evidence, referencing on the slides. It keeps us up-to-date.

L: So that's been a massive improvement.

Moderator: Do you think the changes have helped the students?

F: Yes. And I think you can see academically as well. We cover section one and two of the assignments better now. And they are doing much better in the anatomy and physiology, because the links are better. In the study days we are linking disordered A&P to patients' illness.

C: I think you can see in clinical practice that the students are bringing back what they have learned in the study days, they bring it back onto the unit, challenging people's practice.

L: I had a mentor update yesterday, and one of the people was quite passionate about why do we need this and why do we need that, and I just thought that says it all. You don't get why people are academically improving themselves. Why do I need that to become a better nurse? And that just says it all [critical tone].

F: It is that career pathway. It is not an easy place to work in the NHS, and you need qualifications to get on.

Moderator: Do the changes we have made help students the better relate theory to practice? And are now we better at educating our critical care nurses?

H: I think we are better at linking evidence-based practice. I am much more aware of not just relying on my tacit knowledge. I am much more aware and likely to double check evidence. It is leading by example.

Moderator: And I think tacit knowledge is really important, but knowledge can also go out of date.

L: It gives you the opportunity to question whether something is right, and where did they get that information from.

C: I think that has always been a way of doing things in the jargon in critical care. The proper knowledge, that deep knowledge IS required.

H: As much as we want to come more academic, we don't want to make the mistakes we did with the ENB 100 [earlier version of the critical care course], where it became all about academia. That's what we need to avoid.

Moderator: Do the changes that we have made do a better job of relating the theory to clinical practice? And are we doing a better job? [Affirmative group response]

F: For instance arterial lines. When we come to cover this, the students' faces drop because they think they know it already. So that made me go and get on the internet, and look for information that's new, which led me to find the case of a lady who died following an air embolism, which we can relate to the care of arterial lines.

Q.4. Has the quality of the academic teaching and support improved?

F: Yes. They engage more with the academic side of things, we offer them some areas to look at that they may not have thought about before. We are getting to focus more on the wider aspects of care. They are more intrigued with the academic side than they used to be, because they have heard that we have a high referral rate. They do more engage more.

Moderator: Are we engaging our students in more critical thought during the study days?

J: On the respiratory study day we have changed it. We have included things on maximum medical treatment. We use small groups to get them to look at the evidence of why we do things using their smart phones, so they have to review the evidence of

why they do certain practices. Afterwards we say that's critical analysis. So that is that discussion coming through.

F: And when they see what is done in different trusts, that's when they can use critical analysis to ask why, review the evidence and review your practice. Why have they got plasma lite [fluid product] and they haven't?

Moderator: This last question refers to process of participatory action research and your involvement.

Q.5. What has been your experience of being involved in action research as a methodology in education?

F: It can be very hard work. You just feel you're changing things all the time. We try that, it didn't work so we'll try this. And it seemed that every few months we were changing something, and don't give sufficient time to see if something is working before we change it again. But I know that's what action research s.

C: It's making those small changes.

Moderator: It's two years. It's a long time two years. It takes a long time to see if things work.

F: if you ask L about the enrolment. How many things are changing in enrolment to make that process better.

L: I think you have been very lucky because you have chosen a subject to do action research upon where we all have a vested interest in making things better. I suspect, but I don't know, that not all action research goes like this. I think you got a group of people here who absolutely want to make sure this course is the best. And the

students are critical care nurses, so they are in a job already, doing what you're action research is about.

Moderator: So what are the positives and what are the criticisms?

F: The positives are that we have now got a really good course. The getting there has been quite tough.

C: It's been long and tough really.

F: We're not making changes for the worse… It's for the better.

I: I wasn't there for the first part of the study which listening to this, I am quite happy about now [group laughter]. Coming in as a new PBE it's been something I've been able to engage with because it's constantly ongoing. You are not tagging along on someone else's baby.

F: I think we would all agree that we have got something very special here, something unique. We probably all want it to continue and we want to be ahead of the game. So we are all working to the same goal.

C: I think what is nice with this is I was quite new a few years ago and it was all very rigid, and there was no opportunity to change. This is how we teach it and this is how you are going to teach it. Even if I stepped outside the box and taught the way I wanted to teach it, I was pulled back into line to say no C. So I felt very restricted as an educator. I have come from an educational background prior to this job, and I was never told this is how you're going to teach it, this is a line you're going to follow. Whereas now I am seeing a different thought process, where you can actually make those changes.

F: And [we are] getting a better understanding of how to run a degree programme.

C: We are no longer restricted as to how this study day's going to be taught.

F: I would like to think you're action research now will enable us in the future to carry on with the development of the programme.

H: I think that's really important. We are really facing challenging times with regards changing educational expectations from students and the NHS, and we can't just sit here and stay the same, we are going to have to keep on doing this.

L: I think far too often we do things, and we don't get quality feedback. We have never been assessed, never had feedback about this is working or that is working, so I think that's a massive positive of action research, that actually gives us a picture of what we are doing.

F: We working better together as a team.

Moderator: what about the student voice, because most of my time has been spent with the students, getting their feedback and then feeding back to you?

L: It's been great, because some of them will be reluctant to feed that back to us, they would do away from us. Whereas with this they have been honest, and it's not all been positive, some of it has been quite negative, but gives you the opportunity to change it then. I think giving us an overall picture has been great, because it's been looking at the whole course, rather than looking at your day, all my day, that's been great.

[55.10]

F: We all have different learning styles. You go and see other people's days and you think what a great idea, why didn't I think of that!

H: I think it keeps you on the ball. I really believe that better students make better teachers. You really have to up the game [our students are more experienced].

Moderator: I think there has been a major demographic shift from being mainly diploma students to graduates and increasingly master's. What about criticisms of action research?

L: Sometimes I felt we were changing things just to suit your research. Would you have invested the same amount of effort if you are just being a new person rather than doing the research? Are we just doing this so you got something to focus on? Or are we actually doing it to enhance the course?

F: But can be quite soul destroying, changing it and changing it. Like J said, you don't get the recognition of the amount of work you put in.

H: I'm not sure that is partly about boundaries. I think sometimes changes were proposed, and they can become niggles, because that's what happens when people feel threatened. It sometimes felt like, who has the final say here? It felt quite antagonistic.

Moderator: The Programme Committee is who has the final say in where decisions are made.

H: That was never really implicit.

L: I think negativity left quite quickly. Initially it was quite high, but then I think once people got a better understanding, then it has been really good. Because I think it is a really

good method; it's ongoing isn't it. You start making a load of change at the beginning and then revisiting them. I quite like the fact that this is ongoing. Towards the end you recognise that's a really positive thing.

I: The flip side to that is, by definition it's an ongoing process and it's never going to be settled. You are never going to have that satisfaction.

Moderator: I think you're right. The research can't continue, but the process, the student voice and some of the peer assessment things that we started going on ought to continue [C, L & H agree]. You will decide that amongst yourselves. It's been a very useful process, listening to the students and feeding back, and then seeing you teaching and being able to feedback, it has been positive. As far as doing a PhD, I never wanted to do a PhD. I simply saw something that needed to be done and thought I could do that in line with a PhD. If I finish this and then write in a PhD, I will obviously be happy, but the process for me has been very good over the last couple of years. I've been so heavily involved in this place for so long, I kind of thought it be would really interesting, cathartic really.

L: I think something else to say is that you probably haven't have the credit for the amount of work that you put into all this, because interviewing all those students and then putting it into this format. I can't imagine. We do moan a lot.

C: You'll get your PhD out of it.

Moderator: Do you think the quality of the programme's improved?

L: Absolutely!

H: Did the marks improve [student assignment marks]

Moderator: The marks have improved. Presentations are 9% referral rate, an average in the 20s.

H: So that has improved!

Moderator: The essay referral rate was 48% prior to the study, and now its 20%. And the marks are also higher, with more students in the 60%+ bracket.

F: You're just looking at the first attempts. Overall, when you take into account second and third attempts, the percentages are very high.

Moderator: Has the action research project had a lasting impression upon the way you view critical care education?

L: Yes I think so. Because we [now] deliver it from a strong evidence base and like F said, as in it has improved me vastly as an educator, because I won't just stand there and say something, unless I am sure it's the right thing to say and I have got evidence to prove it. It is not just this is the way you do something, because I say so, you need to know the evidence to support what you're teaching. It might be the same things that we have been teaching, but this is the right thing to do because of this and this [evidence base].

F: The programme is going to be high-profile, because we now have students wanting to access it from outside Greater Manchester. Students are moving trusts to get on the programme.

L: We get students coming saying 'I really enjoyed that. I've really enjoyed doing this course' [all agree].

Moderator: One of the challenges was to get the balance right, of improving the academic side, whilst not diminishing in any way the clinical strength of the course. And hopefully that's what we've achieved. I have seen all study days and I can't imagine there was a better critical care course running anywhere in the country.

C: Think the students are quite surprised when they see you working on the critical care unit, I think it gives a course great credibility. The credibility in the classroom because you can relate back to what you're doing. I went on the last ENB 100 course and the lecturer was not clinically based and it makes a massive difference. They weren't up-to-date with what's happening in the clinical area.

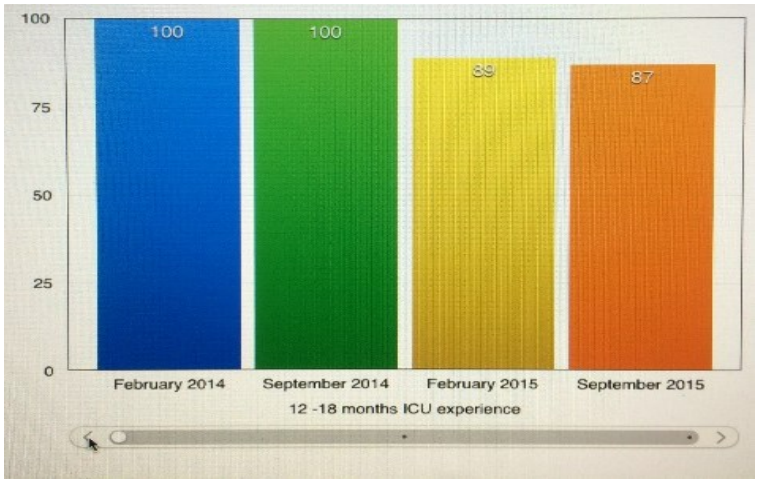
F: I don't do a lot of clinical work, but I think it's important that you are **based** in the clinical area, so you are aware of the issues, which is different from being based at the University.

Moderator: Has anyone got anything else to add before we finish? Thank you for your contributions.

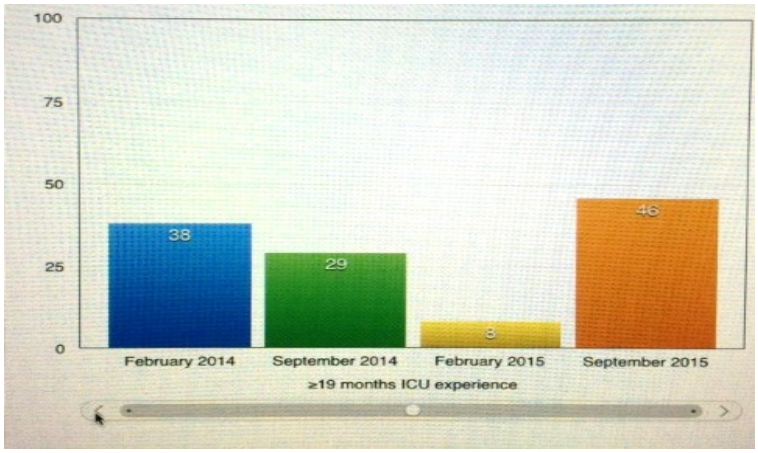
Appendix 11. Keynote Transition Slides

The following slides show three phases contained within one interactive chart. The chart conveys the period students considered was optimal pre-course ICU experience.

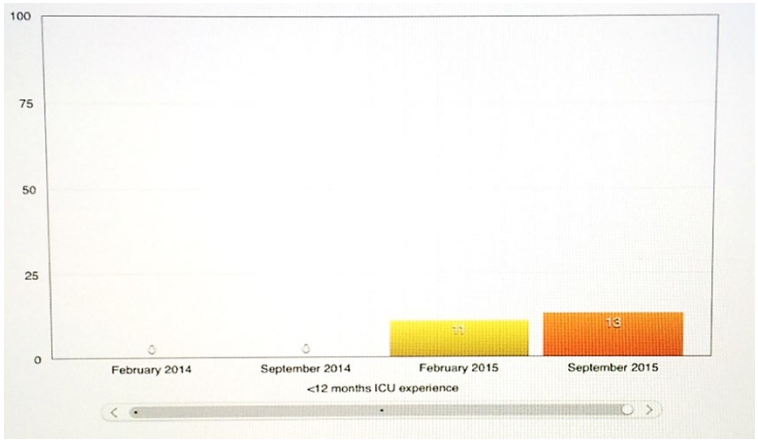
The initial view demonstrates consistently strong student support across the study for a minimum of 12-18 months' pre-course ICU experience.



Transition one illustrates that many students felt a period of greater than 18 months' pre-course clinical experience within this complex and challenging clinical environment was appropriate.



Transition two shows there was little or no support for accessing the course with less than 12 months' clinical experience.



Appendix 12. Minutes: National Critical Care Nurse Education Forum meeting

Critical Care Networks-National Nurse Leads

Notes of Critical Care Nurse Education Review Forum Meeting held on Thursday 15th October 2015

3a.	**PRESENTATION: Delivering front line improvement, an action research study** Jed Finch from Manchester Metropolitan University presented the finding of the action research study which he undertook looking into the critical care course offered at the Skills Institute in Manchester. This project has span over a 2 year period and has included feedback from practice areas (mentor & lead nurses), learner and the lecturers & educators delivering the sessions, giving a 360 degree view. Manchester currently deliver a post graduate certificate (2 x 30 credit modules) and it was identified that academic performance was inconsistence, with referrals on first attempts high. As a result the following areas were researched: • Course delivery • Student experience The participatory action research had 4 cycles of research and included: • Questionnaire at start and end of programme for all staff groups • Focus groups sessions **Findings:** As a result of this work the university have made changes to their key performance indicators. It also became clear that people were accessing the programme at different times in their career development and for different reasons, which created different levels of motivation during the course work. There were also different levels of motivation reported by the Educators and the Students. Interestingly the level of personal motivation differed between those Student accessing a degree level course and those accessing a Master's programme, with Master's level programme Students reporting slightly higher motivation. It was identified that very few students knew about the CC3N education standards and transferable status of the award they were gaining, which has lead to more information being provided before accessing the course and at the start of the programme. The following criteria has been applied: • Course offered at level 6 and 7 • Writing skills assessment introduced at the start of programme • Criteria for accessing Masters level introduced (full programme at level 6 required) • 12-18 months clinical experience required before accessing the course (to support reflection for assignments and critical discussions in class room) • Step 1 competencies completed before accessing the course • Improved engagement with students • Introduction of formative assessment • Introduction of mandatory meetings throughout the programme Students reported the following as providing most value to them: • Improve themselves as critical care nurses	

- Provide improved patient care
- Achieve reason knowledge base in anatomy and pathophysiology (A & P now in workbook to accompany step 1 in practice to achieve higher level of base line knowledge on entrance)
- Improved decision making and evidence based practice
- Gaining competence and confidence

Classroom observations provided the following information:

- Referencing and evidence base for taught sessions were inconsistent
- Pathophysiology was not present or under represented
- Evidence base and critical discussion was limited
- Role of the nurse was not always present
- Wider issues in critical care, e.g. case mix, comorbidities and their impact were not always explored in detail

As a result a number of changes have been made to the programme to reflect the feedback gained, these include (but are not limited to):

- Promoting culture of mutual respect
- Review of all taught sessions (now robustly underpinned by research or evidence based practice)
- Inclusion of pathophysiology
- Inclusion of patient case studies (introducing patients and family, this sets the themes for the sessions throughout the day)

Feedback following the changes has been very positive, with Educators reporting the sessions are more enjoyable to teach, provide discussion on professional issues and allow for problem solving of complex patient care and needs. The changes have also demonstrated a reduction (consistent over time) in referral rates, they have reduced by half and more students have been passing the presentations following the introduction of the formative assessment process. It has given the students a voice as well as the lead nurses and practice educators. The level of teaching has improved alongside improvements seen in academic performance.

Issues explored in practice uncovered the following challenges:

- Competency assessment in practice
- Time with mentors
- Busy units and high workload
- Confidence in assessment process

Following the presentation the group discussed the findings with the presenter and a few key areas were identified to discuss in more detail when reviewing the standard document, these included:

- Criteria for accessing course
- Inclusion of case studies
- Inclusion of pathophysiology
- Development of national workbook to accompany step 1
- Developing a tool kit for mentors and assessors in practice

M Kynaston on behalf of the group thanked Jed Finch, Manchester Metropolitan University & the Skill Institute for sharing this comprehensive and valuable piece of work with the group. If the group would like to discuss any elements of the research in more detail Jed can be contacted via email: j.finch@mmu.ac.uk

Appendix 13. Letter: National Critical Care Nurse Education Forum

14th March 2017

To Whom It May Concern

This is to confirm that Jeremy Finch attended the Critical Care Nurse Education Review Forum (CCNERF) to share with the group his PhD research findings from the action research he conducted to improve the delivery of critical care nurse education. This was well received by the group and informed the review of the National Standards for Adult Critical Care Nurse Education which were subsequently revised, with version 2 launched in 2015/6.

This research helped the national group to maintain and strengthen the academic component of the Standards document and re-assured practice representatives that this was a welcome standard and produced competent practitioners. The research also highlighted the need for Quality Assurance within practice as a necessary element to the standards document.

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Acute Illness Recognition Module

Disability (Pain) Scenario

Any unsafe practice will result in an overall fail

A 45 year old woman is admitted to the surgical ward following hemi colectomy for CA Bowel. She is currently on 2 litres via nasal cannula. She has had one dose of morphine in theatre recovery and has been sent to the ward with a PCA in situ.

To call for appropriate help at ANY point – to give justification of timing of call and who that appropriate person is

Assessment	Observations	Management
	AIRWAY	
Patency / maintenance Can they speak? Added noises? See-saw movement?	Patient restless and agitated Attempts to respond to voice but is maintaining her airway.	Checks patency Checks patients response to questions
Is O_2 in situ?	Saturation 88% - 90% on 2 litres via nasal specs 94% to 98% with high concentration oxygen 75% If oxygen not commenced	Apply high concentration O_2 15 L
	BREATHING	
Respiratory rate, pattern, depth and symmetry	28 and regular, Shallow Equal bilateral chest movement	Position Recognise need for high flow oxygen ABG ? Chest X-ray Physio
Accessory muscle use	Is using accessory muscles	
Oxygen saturation	Saturation 88% - 90% on 2 litres via nasal specs 94% to 98% with high concentration oxygen 75% If oxygen not commenced	
Colour	Pale	
Added noises	No added sounds Quiet bases bilaterally	
	CIRCULATION	
Manual pulse	110 bpm radial pulse	? Fluid bolus Fluid balance chart ? catheter Check how long since theatre Consider additional cannula Bloods – U & E's FBC, Clotting, CRP, Consider blood cultures if patient fits sepsis profile Consider warming
Manual BP	145/87	
Capillary refill time	2 seconds	
Temperature	35.1°C	
Fluid balance	100mls since theatre IV fluids 83ml/hr	
Colour	Pale,	

	DISABILITY	
Conscious level	V on AVPU conscious level improves as Oxygen saturations improve , patients is agitated	Acknowledge the need for analgesia Consider that morphine is not working – patient having side effects.
Blood glucose	6.0mmols	
Pain	Severe	
Pupils	PERL , constricted	
Seizures	None	
	EXPOSURE	
Head to toe, front and back	Patient pale Shows signs of pain when examining abdomen No signs of bleeding Feels cool to touch	Recognise the need for surgical help, from the clinical signs. Patient dignity is maintained at all times

When help arrives:
Full handover utilising the SBAR tool
Discuss management plan and further investigations
Review medical notes and drug prescription chart

Offer differential diagnosis:
Sepsis
Acute Kidney Injury
Chest Infection
Post-operative complications – bleeding, infection, anastomotic leak

Suggested evidence base to support interventions/management:
British Thoracic Society (2008) Oxygen therapy
WHO Analgesic ladder
Any trust related policies
Department of Health
Trust Policies related to opiate administration and management of side effects

Appendix 15. AIR Unit Analytical Guide for Grading Applied Theoretical Knowledge

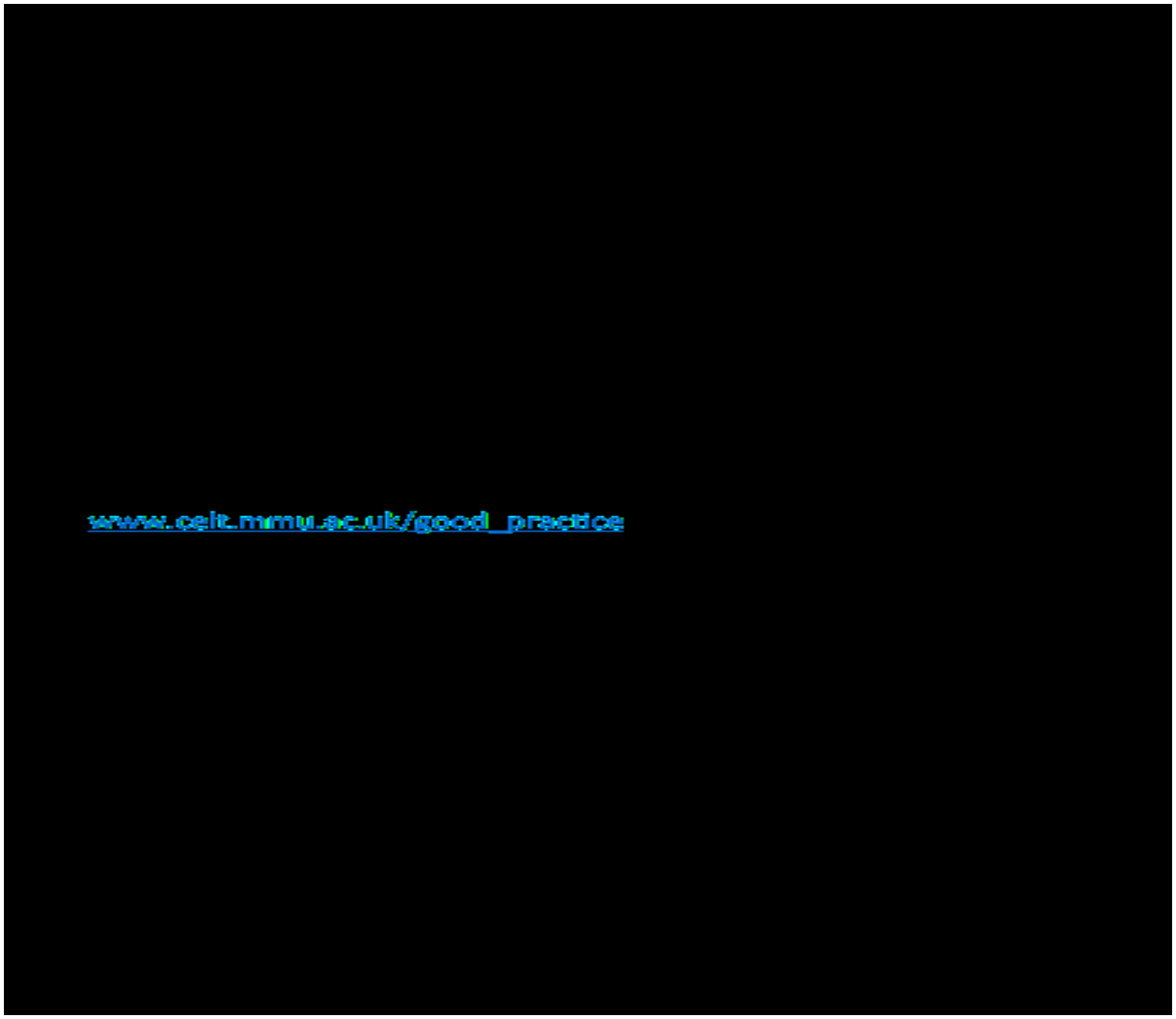
AIR Assessment analytical marking template (level 6) Pain

	RESPONSE: QUESTION 1		RESPONSE: QUESTION 2		RESPONSE: QUESTION 3		RESPONSE: QUESTION 4		RESPONSE: QUESTION 5
10%	Provides a critical explanation of the underpinning physiological changes, which are related to the patient's medical condition	20%	Identifies the key signs of deterioration and recognises the severity of illness	30%	Reflects on care & critically discusses the evidence base that informed decision-making. Considers any relevant professional issues	30%	Identifies immediate priorities and communicates a clear management plan including MDT referral	10%	Are there any changes you will consider making to your clinical practice?
8-10%	Critical insight into the underpinning physiological changes, which are related to the to all aspects of the patient's medical condition Clear logical communication of underlying process: respiratory centre in brain, hyperventilation, hypoxia, increased resp rate and work of breathing, hypercapnia, communication issues, new confusion, CVS dysfunction – increase HR,BP initially, renal impairment, deteriorating conscious level and increase in blood glucose secondary to stress response	16-20%	Identifies all key signs of deterioration and related this to the correct recognition of the severity and nature this onset of acute illness Recognises respiratory failure Recognises emergency actions / referral Recognises CVS dysfunction Hypoxia Changes to urine output Altered blood glucose GCS Reporting of pain	22-30%	Critically reflects on all aspects of care, and demonstrates excellent knowledge of the evidence base used to support decision-making. Considers any relevant professional issues. Administration of oxygen, titrated to target saturations (BTS, 2008) Positioning Medical treatments Fluid resus (ATM, 2015) Physio referral NMC Administration of Medicines Local PGD's WHO Analgesic ladder	22-30%	Clearly identifies all the immediate priorities and communicates a clear management plan including MDT referral Improvement of oxygen delivery Fluid bolus to improve perfusion of cells Position Medicines administration Professional accountability and standards Assessment of pain using recognised tool Management of pain Consideration of other significant causes eg sepsis Track and Trigger	8-10%	Evaluates the potential for changes to their clinical practice Development of PGD Introduction of referral pathways Structured assessment documentation Track and Trigger introduction Pain assessment tools Early recognition Sharing with the wider team – safety huddles
6-7%	Good critical insight into the underpinning physiological changes, which are clearly related to most aspects of the to the patient's medical condition Either omits 1-2 elements	12-15%	Identifies most of the key signs of deterioration and related this to the correct recognition of the severity this onset of acute illness Either omits 1-2 non-life threatening elements.	18-21%	Critically reflects on all the major aspects of care, demonstrating very good knowledge of the evidence base used to support decision-making. Considers any relevant professional issues. Either omits 1-2 non-life	18-21%	Identifies the immediate priorities and communicates a clear management plan including MDT referral Either omits 1-2 non-life threatening elements.	6-7%	Good consideration of the potential for changes to their clinical practice Either omits 1-2 elements. Communicates it

AIR Assessment analytical marking template (level 6) Pain

					& clarity.				
4-5%	Some critical insight into the underpinning physiological changes, which are related to most aspects of the patient's medical condition May omit some key elements. Demonstrates an adequate and safe level of knowledge	8-11%	Some insight into the key signs and symptoms of this onset of acute illness Acts on findings and responds in a safe manner, but lacks understanding and insight	12-18%	Critical reflection on the major aspects of care, demonstrating good knowledge of the evidence base used to support decision-making. Considers any relevant professional issues Acts on findings and responds in a safe manner, but lacks understanding and insight	12-18%	Identifies the most of immediate priorities and communicates a safe management plan including MDT referral Acts on findings and responds in a safe manner, but lacks understanding and insight	4-5%	Fair consideration of the potential for changes to their clinical practice Responds in a safe manner, but lacks understanding and insight
3%	Limited insight into the underpinning physiological changes. There is insufficient application relating to the patient's medical condition Omits several key elements. Does not demonstrate an adequate level of understanding	6-7 %	Limited insight into the key signs and symptoms of this onset of acute illness Delay in recognising severity of deterioration, little demonstration of understanding or insight	9-11%	Reflection is not critical. Major aspects of care are not considered. The evidence is not contemporary, inaccurate or weak. Delay in responding to findings, little demonstration of understanding and insight	9-11%	Fails to identify the immediate priorities and or communicates a safe management plan including MDT referral Delay in responding to findings, little demonstration of understanding and insight	3%	Limited consideration of potential changes to their clinical practice Offered very limited suggestions for changes to practice, very little reflection
0-2%	Little or no insight into the underpinning physiological changes. These are not related to the patient's medical condition	0-4%	Little or no insight into the key signs and symptoms of this onset of acute illness	0-6%	Little or no reflection on care. Little or no evidence base presented or consideration of professional issues.	0-6%	Little or no attempt to identify the immediate priorities and or communicates a safe management plan including MDT referral	0-2%	Little or no consideration of potential changes to their clinical practice

Appendix 16. Good Practice Exchange Invitation



Appendix 17: Research timetable summarising all data sources

✓ – Sept'12 finish				
✓ Feb'13 finish✓ Feb'14 start✓ ✓	✓ – ✓ ✓	Feb'14 start✓ Feb'13 finish ✓	–2'nd round	PC & CWG Feb before 2'nd
✓ – Sept'13 finish✓ ✓	✓ – ✓ ✓	–	–	PC & CWG April'14 & end June
Aug'14 – Dec'14				July'15
Jan'15 –September'15	✓ ✓	–	– – – –	Feb'15 before 4'th

The research diary and the transcripts of interviews with the MCCC managers are not included with the appendix. The diary and transcripts contain information which would lead to the identification of research participants and research setting. This decision respects confidentiality, in keeping with the promise to safeguard the anonymity of participants.